

~~7393. ecc 24.~~

M E D I C A L

1609/26

F A C T S

A N D

E X P E R I M E N T S.

By FRANCIS HOME, M.D.

Fellow of the Royal College of Physicians in *Edinburgh.*

L O N D O N:

Printed for A. MILLAR in the Strand,
And A. KINCAID and J. BELL, at Edinburgh.

MDCCCLIX.

MEDICAL

FACTS

AND

EXPERIMENTS



BY THOMAS HENRY HALL, M.D.

Fellow of the Royal College of Physicians in London

LONDON

Printed for A. L. H. & Co. 11, Abchurch Lane, London, E.C. 4.

THE LONDON AND WESTMINSTER BOOKSELLERS

ADDITIONAL

ADVERTISEMENT.

FACTS and Experiments are very useful, and much wanted in the medical art. I have, therefore, thrown together, without order, but not, I hope, without utility, some that appeared to me material. Epidemics, carefully observed, and candidly narrated, must always be so. Those which I have described, and which attacked the English troops abroad, last war, are either passed over, or not separately described by Dr. Pringle, in his most excellent practical book on Camp Diseases. We cannot, at present, be too particular with regard to these, as our troops are now liable to suffer such like.

THE cases contain something singular in the symptoms or in the cure. I have selected those chiefly which ended unsuccessfully, as they afford the fullest picture of the disease, as they often teach more than those which have a contrary issue, as they show the fallacy of trusting to a few observations in the cure of diseases, as they teach us not to be too sanguine in our hopes and promises, and as they will at least procure credit, which has not always happened to cases that were most successful.

C O N-

CONTENTS.

PART I.

Epidemics.

S E C T. I.

Epidemic low fever of 1742, page 1

S E C T. II.

Epidemic remittent fever of 1743, 16

S E C T. III.

Epidemic remittent fever of 1748, 38

S E C T. IV.

Epidemic lumbago, 76

S E C T. V.

A particular species of mortification, p. 81

S E C T. VI.

Of the small-pox, 89

S E C T.

vi CONTENTS.

SECT. VII.

Miliary fever, p. 96

SECT. VIII.

Of the glanders, -99

SECT. IX.

Of gun-shot wounds, 108

PART II.

Cases.

SECT. I.

Of the pulse, 121

SECT. II.

Gout, 125

SECT. III.

Anasarcous and dropfical swellings, 128

SECT. IV.

Remittent fever, 137

SECT. V.

Periodic dysentery, 142

SECT. VI.

Periodic Cough, 145

SECT.

CONTENTS. vii

SECT. VII.

*A humid asthma, suppuration of the liver, and
erysipelas,* p. 150

SECT. VIII.

Stone in the ureter, 153

SECT. IX.

Suppuration of the kidney, 158

SECT. X.

Ulcer of the lungs, with hysterical symptoms,
159

SECT. XI.

Consumption, 163

SECT. XII.

A hectic fever, 165

SECT. XIII.

Inflammation of the testicle, 167

SECT. XIV.

A fall on the head, 174

SECT. XV.

Fracture of the skull, 178

SECT.

S E C T. XVI.

Inflammation of the brain, page 184

S E C T. XVII.

Low fever, 194

P A R T III.

Experiments.

S E C T. I.

*Experiments on the proportionate velocity of the
blood, and heat of the human body in mor-
bid cases,* 217

S E C T. II.

Experiments on the nitrum murale, 228

S E C T. III.

*Experiments on the quantity of insensible per-
spiration at Edinburgh,* 235

S E C T. IV.

Experiments on the inoculation of the measles,
253

M E D I-

MEDICAL FACTS
AND
EXPERIMENTS.

PART I.

Epidemics.

SECT. I.

*An epidemic fever amongst the British troops
in Flanders, 1742.*

THERE appeared a very uncommon species of fever at Ghent, about the end of September 1742, and continued till the end of January. It began in Bruges, about the end of July. Excepting a few agues, it was the first epidemic disease which attacked our troops; and, though not very general, yet was very mortal. From the nature of its symptoms, we called it the slow fever. Its most usual appearance was in this manner.

THE person loses his quickness of mind, and is very slow at giving his answers. This was so strong a diagnostic symptom, that we knew certainly when one was in this fever, by the first sentence which he spoke. This gradually degenerated into a stupor, without any great pain in the head, wherein he continued often for fourteen days.

THE tongue turns first white, then brown, afterwards parched, and continues so during the whole disease. The first sign of the patient's turning better is, the moisture of the tongue returning. The eyes stare, and appear very dull.

THEIR pulse is not so much different from a healthful pulse, as one would have expected from the other symptoms, only a little quicker and lower; it generally beats about 100 or 110 in a minute. Their skin is generally parched and dry.

THE

THE respiration is very quick, and sometimes so when the pulse is not equally affected: one in the hospital, whose breathing was very quick, had his pulse at 30, while mine beat 22.

THE voice becomes low and weak after they have been some time in the fever. They generally complain of a great pain below the stomach. Sometimes this disease comes on after the injudicious stopping of a diarrhœa, and sometimes the diarrhœa comes on during the course of the disease. When the disease has gone any length, they generally void their excrements insensibly.

THEY are sometimes seized with an intestine stoppage of water: sometimes their water scalds them as in a gonorrhœa.

A HICCUP and *subfultus tendinum* often come on before death.

IF nature gets the better of this fever soon, which seldom happens, she throws it off by urine and by sweat. But if it lasts five or six weeks, as it generally does, then it has no sensible crisis, and the first sign of recovery which appears, is the patient's tongue turning moister.

As it appeared sooner at Bruges, it was more mortal than at Ghent, and the surgeons there computed that they lost two thirds of those who were seized with this disease. Honeywood's regiment, though much divided in their quarters, and in the hands of the Flemish surgeons, lost but one man in this fever. Their situation was higher and drier than ours.

HAVING described the symptoms, we now go to the cure. The pulse being rather weak from the beginning, there was no indication to let blood in this disease. The blisters which I applied, or saw applied

ed

ed in the hospital, seemed neither to do good nor harm. The pulse was never altered as to its velocity, or raised by them, which then made us doubtful, whether ever blisters raised the pulse. A longer experience has shewn me that when they have a good effect, they much oftener leave the pulse lower.

THE cooling salts, *viz.* nitre, *crem. tart.* &c. were tried without any success.

WE observed in general, that whatever way we could raise a sweat, the patient was always the better for it; I observed, that boluses of *sal. c. c.* with *camph.* given at bed-time, did some service. The *antim. diaphor.* was found of use. Boluses of *theriac.* and *lap. contrayer.* were not generally so successful, either in my private practice, or that of the hospitals.

THE only application which seemed to make any great alteration in them to the

better was, bathing their feet at bed-time in warm water. It generally gave them a breathing sweat in the night-time, refreshed them very sensibly, made the pulse more strong and full, and their tongue moister in the morning. All those on whom I tried it, found themselves better, at least for two or three days. The same observation was made in the hospital. Nay, the disease turned worse if this application was omitted, after being once used. Some chused rather to foment than bathe the feet. I used generally to give *Pill. matth. gr. vii. sal. c. c. gr. iii.* to promote the breathing sweat, and with success.

WE allowed them a slice of sweet orange to keep the tongue moist. For the pain below the stomach, which they generally complained of in this fever, we applied a blister to the part, which always removed the pain. I cured this pain in one by applying a plaister of three parts melilot, and one blistering plaister, similar to that now called the *emp. calid.*

AN

AN infusion of *rad. alth.* was used with great success in the scalding of the urine. If there was a stoppage of the water, I added *sal. nitr.* to it.

WE found nothing so effectual in stopping the symptomatical looseness, as the *decoct. serpent. pb. Edin.* giving 3 or 4 spoonfuls of it every 3 or 4 hours.

I SHALL now transcribe one case from my papers, to illustrate the nature and cure of this fever. January 3d. Mrs. Millar had a looseness last week, upon the stopping of which, she has had severe gripes in her guts. She has a little pain in her head and eyes. Tongue dry, and brown. Skin dry. Weariedness over all. Pulse low and frequent. Spirits sunk. *R. pulv. rh. gr. xxv. statim, exhibend. R. empl. epispast. terg.* —4th, Gripes gone; pulse not raised. *R. campb. sal. c. c. ā gr. iv. conf. ros. q. s. cap. b. s.* —5th, A little better, but tongue still dry.

Repet. bol. u. a.—6th, Pulse still low and frequent, body and tongue dry. *Pediluv. b. s. R. pil. matth. gr. viii. sal. c. c. gr. iii. divid. in pil. N° ii. cap. b. s.*—7th, Had a moisture on her skin for about three hours this morning. Pulse higher, tongue softer and moister; says that she is better. *Repet. pediluv. et pil. matth.*—8th, Continues better. Omit the bath to night, to see if these good effects are really owing to it. That I might at the same time discover whether they were not owing to the opiate, I ordered at bed-time *fyr. diacod. ʒj.*—9th, Worse. Pulse very low. Tongue dry, very slow at answering questions. Spirits low. This was strong conviction that the good effects were owing to the bath, and not to the opiate as an opiate, but as an assistant of the bath. *R. Pediluv. et pil. matth. b. s.*—10th, No better. Voided a dead worm this day. *R. pediluv. R. sal. c. c. campb. ā gr. iv. fyr. diacod. q. s. cap. b. s.*—11th, Was seized yesternight with a looseness, which stunk very much, and was of a colour betwixt yellow

yellow and black. Little sleep to night. Tongue moist, but still brown. *Pediluv.* R. cast. gr. xv. fyr. q. f. cap. b. f.—12th, Pulse low, but more regular. Tongue brown and dry. R. bol. cum sal. c. c. gr. iv. R. sp. c. c. 3ss. cap. gut. xx. sæpe.—13th, Pulse very low. Cheeks red. R. theriac. lap. contrayer. ā gr. xv. m. f. ejus. bol. N° iii. cap. 8va. hora.—14th, Very low. R. bol. u. a.—15th, A little better. Tongue brown.—16th, Tongue less brown.—17th, Tongue white, and pulse regular. No evident crisis.

LET us now view the internal state of the body in this fever. Durham, of the 2d regiment of foot-guards, was opened in the hospital. He had been a month in this fever, and twenty days of this time in the hospital. The only application which seemed to be of service to him was the fomenting of his feet; but this at last lost its effects too. He voided his excrements insensibly for about 14 days, a symptom very common in this fever; but what was
a very

a very uncommon circumstance, he called for the urinal at the same time. He complained of a difficulty of breathing for 4 or 5 days before he died. Upon opening his body, a little water was found in the pericardium. Within the right ventricle was found a polypus, like firm inspissated jelly, it seemed to have no attachment to the ventricle. His lungs were not inflamed, but very full of blood. His spleen was very large. All the concavity of the liver was tinged with a dark leaden colour, but the gall-bladder was not. The veins of his stomach, as indeed all the veins of his viscera, were very full. The internal coat of his stomach seemed to be much inflamed, and of a livid colour. The small guts were inflamed in many places, and on cutting them open, nothing was found within them. There was seemingly a good deal of fat about the intestines, but upon observing it narrowly, it appeared very watery, and the cells seemed rather to contain serum than oil. From this inspection,
not

not much could be drawn to promote the cure. From the inflammation of his guts and inside of his stomach, we may see the reason of those pains about these places, that they so commonly complain of in this fever, and probably the reason why they allow their fœces to slip from them involuntarily.

... of the horse-guards, was opened January 24th. He had been in one of these slow fevers for a month. He was first seized with a vomiting and purging, which yielded to a vomit and injections. The surgeon said, that he was more relieved by gentle doses of *antim. diaphor.* than by any other medicine. He lingered in this fever, sometimes complaining of a small pain in his head, till he was sent to the hospital, where continuing two days in a low way, he was seized with slight convulsions, and died. In opening his thorax and abdomen, nothing extraordinary was observed, excepting that the con-
cave

cave part of his liver was tinged with a leaden colour, in the same manner as Durham's. This appearance was found in the liver of another, who had died some days before in the slow fever. Upon opening his brain, sinuses were found in each lobe, full of a green pus, thick in some, and thin in other places. This matter had ea its way into the ventricles, and had filled them. There would have been about four ounces of matter in all. Some matter was likewise observed in the *cerebellum*.

THIS was the first head that was opened of those who died of this slow fever, and there was no opportunity afterwards of pursuing our searches into this part farther. If we are to judge by all the symptoms, it was the principal seat of this disease; but we dare not conclude, that every brain was affected in that manner. In this case we see the substance of the brain converted into pus, and that too of no short standing, since the sinuses were so many,

many, without any sudden or pressing symptoms. What shall we say of matter formed in the *cerebellum*, where the least disorder has hitherto been looked on as mortal? It overturns the doctrine of the schools.

THIS fever is not to be ascribed to the influence of the air, otherwise the townspeople would have been as subject to it as the soldiers, and our officers would likewise have had it in proportion, but none of these two happened; there was not one officer who had this disease.

DRINKING was at first blamed as the cause of it, but the greatest drinkers of spirits were not observed to be most subject to it. The foot-guards, who were most addicted to gin, had not the greatest share of this disease. The soberest bore their part; nay, in all the distempers of this climate, they were the first victims. The officers were not more temperate than in England,

land, and this disease was not known amongst them. The fever, which was the consequence of drinking, when they came first over, lasted only six or seven days.

THEIR food can never get the blame of it, because they were obliged to live on meat, and boil the kettles every day. Their food was indeed changed from what it had been in England. Their roast beef and other strong food, they exchanged for boiled meat and roots. This diet is, perhaps, more conducive to health in general; but the sudden change might have rendered, in a small degree, the body more disposed to slow fevers, and less to the inflammatory, a febrile cause intervening.

THIS cause appears to be the dampness and moisture of their barracks, relaxing the fibres, and stopping perspiration. This will appear very reasonable, when we consider the difference betwixt their lodgings in England, and their barracks here,
most

most of which had not been inhabited for many years; betwixt a strong kitchen-fire in England, and one faggot a-week here, which is all they were allowed, and was scarce sufficient to boil their kettles; betwixt three English blankets and one blanket here, which is all that was allotted them.

THAT this disease was chiefly owing to the fault of the barracks, appeared from Sir John Ligonier's regiment, who came over in the embarkation immediately after the Queen's regiment, and never had this disease among them, having got into better quarters.

IF we examine the state of each garrison, we shall find they had this disease amongst them in proportion to their moisture. At Bruges it appeared sooner, and raged more violently than at Ghent; at this last place more than at Alost, which lies higher up the country.

IF

IF we examine the particular situation of each regiment, we shall find that they shared in this disease in proportion to the dampness of their barracks. Part of the regiment of foot-guards had their barracks on the top of St. Peter's hill, and part of them below, where there is more moisture. The former was much freer from this disease, and much healthfuller in other respects than the latter.

I WAS told by Mr. . . . surgeon to Husk's, that this fever had almost left Bruges at the end of January; that it was only to be found in Cornwallis's regiment, whose barracks are the moistest in that city.

S E C T. II.

The epidemic remittent fever of 1743.

THIS fever began to appear in the end of December 1743, at Worms camp, about four weeks before we left the camp in Germany, carried off a considerable

able proportion of those it seized, and disappeared about the beginning of January. The first attack of it was very like an ague; the person is first seized with a shivering and shaking; in two or three hours he turns feverish, and continues so all night, but generally has a remission next day. The common account they give of themselves is, that they have got an ague, but the hot fit lasts very long.

THEY have all the symptoms common to fevers, such as pains in the muscular parts and bones, weariness, head-ach, with vomiting of bilious matter.

THE pulse is generally low, hard and quick; their tongue is moist; they complain much of the want of sleep. They have often a looseness, which symptom, some weeks after the disease appeared, came on more early than it did at first.

C

BUT

BUT what chiefly characterised this fever and distinguished it from others, which we had seen, were its remissions, which in those whom we sent to the last hospital in Germany, and in them who were seized with it after the troops arrived in Ghent, were quite regular as to time. They are generally pretty free from all complaints in the day time, and their pulse better, but regularly at night they turn more feverish, and the symptoms become more violent. I have often found the pulse very calm in the morning, and have been told that the patient raved all night. They have sometimes a little sweat when the feverish fit goes off, but oftner none. Here again its similitude to an ague appears.

THERE is another symptom which attends this fever, and that is, a jaundiced colour in their eyes and skin, and very often a complete jaundice. This last symptom

tom happened often in other regiments, though in ours I saw but one entirely jaundiced, and that was a little before the crisis; almost all the rest had a yellow colour from the beginning.

THE crisis happens on the 6th, 7th, or 8th day of the fever, either by a plentiful bleeding at the nose, or by a profuse sweat.

I HAVE had several who have got a crisis by a bleeding at the nose, and none of them relapsed. Dr. Bayly told me, that he had observed in the hospital this crisis to be more certain than that by sweating. They often bleed a great deal, which affrights the patient much, especially as I would never stop it at their earnest request. I never found any disadvantage from allowing it to bleed till it stopt naturally.

SWEATING is the most common crisis. It generally breaks out on the 6th or 7th

day; and continues, if the patient has strength enough, and no check given to it, till the fever is gone; tho' very often they relapse, if the sweating is not kept up by sudorific medicines. This crisis likewise shows a similitude to the ague, each aguish fit having a crisis of this sort.

THE patient generally dies on one of these days, and dies very suddenly too. There appears nothing dangerous in his pulse, no mortal symptom; he falls into one of these feverish fits, and is carried off expeditiously in the night-time.

AFTER this fever has gone off, there often remains a great pain in the head, and rheumatic pains in some parts of the body, such as the shoulders, small of the back, and thighs. There often remains such a lightness of their head that they cannot walk or stand.

FROM

FROM observing the two different methods which nature took to throw off this disease, I was led securely to my method of cure. By the bleeding at the nose, I was taught to bleed freely, when I was almost afraid to bleed at all before I saw it, the pulse being generally so low. I found that it succeeded exceeding well.

FROM the crisis by sweat I learned to promote that discharge by sudorifics. Amongst these I found the *decoct. serpentar. Phar. Edin.* to be the most successful. It generally stops the looseness at the same time, and gives nature strength to throw off the disease. The sweating should be kept up till the fever is gone.

A VOMIT was of great use in the beginning of the disease to clear the *primæ viæ* from the bilious matter which was thrown out upon them. It was generally necessary to give a second.

I TRIED *sal nitri*, but without any success: It very often brought on, or increased their looseness. I have ordered camphire with very good success.

I TRIED the bark in the remissions, which sometimes succeeded, and sometimes not; as the pulse was still feverish in the remissions when I gave it, I did not venture to urge this medicine very far, especially when I found that the skin became more dry upon using it, and the tongue more parched.

It was observed by every body that blisters had no sensible effect in the first weeks of this disease, but after it became more continual, I could observe very good effects from them.

As they complained much of want of sleep, I gave the *pil. matth.* without observing any bad effects from the opium;
on

on the contrary, they were much better of the rest, and very often had a breathing sweat along with it. Dr. Bayly told me, that at the hospital at Ostoven, they ran short of *pil. matth.* and in place of it gave opium alone; and that he never could perceive any bad effects with regard to the fever. I found that an opiate was the only cure for the lightness of the head which remained after the fever was gone. As for the pain which remains in the head, *sal. c. c.* given at bed time was found serviceable. As for the other rheumatic pains, a liniment of soap, *spir. tereb.* and *campb.* was effectual.

THE jaundiced symptom was neglected by me, because I observed that it went off by degrees after the fever was gone. Soap and rhubarb pills removed it more expeditiously.

It was generally observed that the patient, from the least irregularity of diet,

diet, relapsed, and often without any visible cause. The relapse was not so dangerous as the first fever, and was cured by throwing the patient into a plentiful sweat.

THIS fever changed gradually about the end of the year from the remittent to the continual, and was in the beginning of January entirely so. The jaundiced symptom disappeared then, the looseness came on more early, and in place of being sometimes critical, was always symptomatical.

THE cause of this fever must be attributed to something general, and common to all in the camp, for officers and soldiers were promiscuously seized with it. But as the officers got better lodging in the march to Flanders, and were in better quarters in garrison, and as they were very warm in good rooms, whereas the soldiers were obliged to take different posts in the
open

open air, the former were free from it in winter-quarters, while the latter were still subject to it.

THIS fever seemed to imitate the ague in many symptoms, its attack, remissions, and crisis, and as there had been no epidemical agues as last year, I am apt to think that this fever came instead of them, and perhaps would have been an ague, had not other causes intervened, which threw it more upon the continual fever. What confirms me in this opinion is, that there were no agues in camp except amongst the horse-guards, who were always close to his majesty's quarters, had not so many guards as the rest of the army, and consequently not so much exposed to the influence of the air. The cessation of the remittent fever about the beginning of the year, still shows more its analogy and substitution in place of the intermittent fever, for this was the time when the intermit-
tent fever disappeared last year.

THIS

THIS fever began some time before we marched from Worms to Spires, when the days were very hot and the nights very cold and damp. We were then encamped in low grounds along the banks of the Rhine. Cold and damp succeeding heat immediately, seems then to have been the cause of this disease.

THE whole summer in Germany to an English constitution was exceedingly hot. We were seldom relieved, as in this island, by clouds or cloudy weather, so that the heat acted constantly upon the body, and rendered the juices more highly animalized than usual. These were always ready to produce some violent disorders if they got not constant vent by the excretories. The two rainy nights after the battle of Dettingen stopt their exit by the skin, turned them upon the intestines, betwixt which parts there is the closest connexion, and so produced the bloody flux, which

which Dr. Pringle describes so accurately, and which raged till this fever began. These very same humours, retained by the action of cold and damp nights, caused this fever.

As the bile is the most highly animalized juice in the body, there was probably more of it formed in the blood than what could be secreted by the liver, and so of course it made its appearance on the surface. There were two circumstances which seem to go a great way towards establishing this opinion. The first, that all the sick at the beginning of the disease threw up a great deal of bile, which made it necessary to give vomits frequently. This shews, there was more of this humour secreted than commonly is, and consequently more of it in the blood.

THE second is, that in all the dissections the liver was never found faulty, tho' that viscus was always particularly searched,

searched, expecting to find something wrong about it.

I BELIEVE that all epidemic camp diseases arise from what we call the sensible qualities of the air, heat, cold, and moisture. The more subtile miasmata has little opportunity of taking place in the open fields, or of continuing their influence when soldiers are so much exposed to winds, and change their camps so often. Some reflexions then on these causes will clear up the origin of this camp disease, and of all others.

THE heat to which soldiers are exposed in the open air, where they generally are, in Germany or Flanders, exceeds any thing that they have been used to in this island, and that heat they suffer for a long time. The heat of the sun-beams often raised the mercury in Fahrenheit's thermometer to 100 degrees, which is considerably above the heat of the human body in
a natu-

a natural state, which seldom arises above 97 or 98 degrees.

THE effect of this constant heat on the state of the pulse must be very considerable.

JUNE 11th. As the regiment was to be reviewed, a centinel had been on duty from 8 in the morning till 4 in the afternoon, and was allowed a chair to sit down when he pleased. The day was clear and hot. I heard him frequently calling for water to drink, which made me curious to know the state of his pulse, which beat 83 strokes in a minute. At 10 o'clock at night, when we returned, and it had turned pretty cool, his pulse beat 70 in a minute. So that by the heat his pulse was quickened something betwixt a fifth and sixth part, and had acquired that degree of fever.

JUNE 28th. By the force of heat I was seized with a severe pain about 5 inches
on

on the right side of the umbilicus, which was probably an inflammation of the omentum or small guts. But on the air's cooling, it went off immediately. It was very common in the evening to have a turbid secretion from the urine, which was a crisis to the ephemera, or day fever, from heat. Nothing was so apt to make the convalescent relapse, as exposing them too soon to the heat of the camp.

IF they retire to their tents in the day time, as they are often obliged to do, to get sleep after they come off guard, or any how indisposed, these are much warmer. I have often seen the mercury stand at 103 degrees. I have been told that it has risen to 110. The most general rule is, that it surpasses the heat of the direct beams about 3 degrees. This is owing to the sun-beams beating constantly against the canvas, and accumulating heat there. The heat of the tent is still more increased when a soldier or two go into it. Besides, a cloud, which

which stops the direct rays of the sun, and cools the air for a little, makes no odds in a tent, as that retains the heat for some time.

THE cold, at a medium, during the night time, succeeding such heats, was about 70 degrees in the open air. In a dragoon's tent it was about 76. There was then a sudden change of about 30 degrees, to which the body was liable for many months in the summer, and no wonder that it brought on diseases. The time that these changes are strongest, is in the beginning of September; for then the heat is almost as intense for a few hours, and the cold of the nights is much greater.

THE cold acts more powerfully when rain or moisture supervenes. Rain or dampness always brings on cold, as appears by the following experiments.

Exp.

Exp. 1. I hung a thermometer in the air at 10 *a. m.* The mercury stood at 65 degrees. Rain came on, and the mercury fell to 58 degrees in the open air. Another thermometer, hung during this time in a small tent, and exposed to moisture, tho' not to rain, fell a degree lower. After the rain had stopt for half an hour, both thermometers stood at 63. There was no sun-shine all the time.

Exp. 2. At another time I tried the same experiment, and in 4 minutes the thermometer exposed to the rain in the open air fell 5 degrees; that in the tent 3 degrees. The latter thermometer was covered from all wet by paper. Moisture, besides, increasing the cold, acts in a more powerful way on the animal fibres by relaxing them. This we shall have occasion to mention more fully in another epidemic disease.

THE immediate effects of the two appeared strongly to me in many instances. June 16th my hydrometer fell from 35 to 25, which as it was constructed was a very great fall. The thermometer fell from 96 degrees to 70 degrees. With this change the day had turned cloudy and rainy. With this change I perceived pains over all my breast: three men were seized with ephemerias, and another relapsed only with getting out of his bed to make water.

I ONCE saw a strong effect of dampness and cold. A damp cold day succeeded some very hot days. The day following almost every one that I spoke to, officer and foldier, complained of gripes.

THERE seems a difference betwixt these three great morbid causes, *viz.* heat, cold, and moisture, with regard to the time in which they produce their effects. Heat seems to produce its effects immediately

D

on

on the human body, and would incline one to think that some subtile particles are admitted into the circulation which disturb it. Moisture has its effects in a few hours, nay minutes : gripes are often brought on immediately by moisture applied to the surface ; I have frequently observed, that a disease from moisture appeared that very day. But the effects of mere cold follow at a greater distance, and do not appear till two or three days after : this would incline one to think that by cold something is retained in the human body ; which matter increasing by degrees, makes its presence at last visible.

How these three morbid causes, which act so strongly in camp, should be counteracted, Dr. Pringle has already laid down some good regulations. I shall therefore but just touch this point.

It is as necessary for a prudent general to provide against the effects of heat as
against

against the effects of cold; and the more so, as the men are not so apprehensive of its bad tendency. As many will and must sleep in their tents during the heat of the day, there should be a general order for all the tents to be opened from the morning in two opposite points, that the wind may blow through them: This will keep them as cool as the external air. They will yet become more cool, if a cloak or blanket is ordered to be thrown over them at that time.

Exp. 3. When the mercury stood at 103 in a small tent, I covered it with a dragoon's cloak; the mercury immediately fell to 97 degrees; a strong proof of its good effects.

THE soldiers should be ordered to make bowers in a settled camp, where they should be during the heat of the day; for a tent is as cool as a house at night. When no wood can be had, houses may be dug in the ground, as they do in

the end of the campaign to keep out the cold. This rule is much more necessary for the sick. I think it would be highly proper that every regiment should have a large hospital tent, as houses cannot always be found near the regiment.

THE cold at the beginning and latter end of the campaign, is prevented by cloathing well; taking care that the soles of the shoes and boots be very thick, a circumstance that the foreign troops attend very much to; eating warm victuals; keeping the men in constant gentle exercise; encouraging the use of onions and garlick; making all centinels move about; and allowing a moderate use of spirituous liquors. Walking very fast till a glow is produced before going to bed, is a rule that I can recommend.

'Tis more difficult to prevent the effects of moisture. That their tents may not be overflowed, they should be obliged to
trench

trench them round, tho' they were but to stay a night. The moisture from the ground is more mischievous; this may likewise be prevented in a great measure by ventilating their tents all day; giving them plenty of straw; and obliging them to raise their beds, by the help of boughs, from the ground. If there is a dampness in the air, as there always is at the end of the campaign at night, and may be felt on a cane when it comes on, it is better to retire to the tents. Wine or spirits will then be found useful. I know nothing better than exercise to counteract the effects of moisture. The foot should be obliged to some quick motions, and the dragoons to trot their horses. Prince Charles's campaign was by much the most active, and by much the most healthful.

S E C T. III.

The remittant fever of 1748.

NO disease which attacked the British troops after they went abroad, was so generally epidemic as this *fever was amongst the British cavalry, who were quartered around Boisseduc, and amongst a few regiments of foot who were in that neighbourhood. From its seizing a whole regiment, thirty men excepted, we may see the vast force of this contagion, and that few constitutions were in such circumstances as to resist its influence. But the danger of the disease was not in proportion to the numbers seized. Of 140 patients which I had in this disease, not including relapses, only seven of them died. It began about the middle of July, some weeks after we had left the camp.

* An account of this fever was given in my Inaugural Dissertation, printed 1750.

THE natural history or symptoms of the disease are these. It comes on, as most other fevers do, with pains over the whole body, trembling, and vomiting. The chillness remains for an hour or two, and is succeeded by an often unexpected delirium and burning heat. A pain generally seizes them on the right orifice of the stomach, and spreads itself over that region, which is attended with a swelling and soreness on being touched; this symptom, which was so common at first, was seldom to be seen in September, when the weather began to turn cooler. Pains in the head, back, and joints, attend the fever. The pulse is quick, but seldom to be found very full or hard. A vomiting of yellow bilious matter attends the first days of this disease.

THEIR blood is always of a light red colour above, and below the surface almost black. The surface is always covered with air-bubbles. There seldom or

never appears any white tough substance like jelly on the top. The particles do not adhere, or attract one another so strongly as they do in sound blood, so that the crassamentum is easily separated. By seeing the blood, the disease may be known. The serum appears in smaller proportion than in good health, as there is not so much of it pressed out, and of somewhat a darker colour.

THE belly during the disease is generally bound; when the weather turned colder a looseness sometimes attended it.

THE characteristical symptoms, or that which distinguishes this disease, is its remissions or intermissions. When the fever has continued for some time, it has an abatement, the pulse turns calmer, and the symptoms retire in some degree. Of the 63 patients that were first taken bad, 23 remitted on the 2d day, 15 on the 3d, 13 on the 4th, 8 on the 5th, 3 on the 6th,

1 on the 7th, and 1 on the 8th; not above three or four of them had at first a plain intermission.

IN the fits, the pulse generally beats in a minute from 90 to 110, and in the remission from regular to 95. Every one has sooner or later a remission. This proves but deceitful, for a fresh feverish fit seizes them. Thus the disease continues, sometimes an attack, sometimes a remission. The fit happens every 24 or 48 hours, or is irregular. Of the first 63, 18 were irregular, 12 had it once every 24 hours, and the rest once in 48. The fit generally comes on towards the evening.

THE disease seldom continues beyond the 14th day; after some few fits it generally begins to intermit, especially if the crisis is by sweating.

It is by a plentiful sweating that the disease has commonly its crisis. Partial sweats may attend the disease and prove only symptomatical, but without plentiful sweats the disease can never be mild, nor the pulse free from fever. Sweating is the ordinary crisis or outlet to this distemper. I have seen it once or twice by purging; and once by the jaundice. The urine serves likewise to convey part of it from the blood; for when the urine lets drop a red sediment, it is a good sign, but this is a small secretion in respect of the former that goes off by the skin.

In the fit I have not found that the heat of their body raised the mercury in Fahrenheit's scale, above 104 degrees. It seldom raises it so high. Notwithstanding this seeming regularity of its symptoms, it often proves extremely irregular. As it changes from a continued fever to an intermittant, so it often changes from an intermittant to a continued fever, and brings the

the patient into great danger; if he escapes this and the fever once retires, it seldom attacks him again. As it is extremely irregular, so it is extremely deceiving as to its danger. Often after a fair remission of the fever, it will attack him again, and in a few hours carry him off. I had two, who being free from the fever for six days, were seized in the way I shall now describe; the one died in 30 hours, and the other in 12.

Six of the seven that I have lost in this disease have been taken at once speechless and insensible. They lay still without motion, though not without often groaning. They have scarcely the power to swallow when drink is put in their mouth. A severe purging seizes them, and the faeces run off insensibly. The pulse is soft and low, but not sunk: It is quick, but not so much as to indicate such immediate danger as there is. The breathing turns quick; a rattling in the throat at last attends

tends it; the pulse quickens at a great pace; cold sweats break out, and death comes quickly after to close the scene. One of these patients had an intermission, free from fever, 12 hours, relapsed again into the same state and died; as yet I have not had one that has escaped when really in this way; all these six that died were precisely, as to every symptom, seized in the same manner.

I LOST another in much the same manner. On the 7th day of almost a regular intermittant, he was seized with a fit, which approached near the former, but his pulse continued pretty good. Next morning he was free from all complaints, and almost from fever. At noon he was seized, as all the rest had been, and died at night. Nothing can be more surprising than such a calm pulse, when death was so near at hand.

DURING

DURING this disease, and generally after it is gone, a severe racking pain in the head attacks the patient. This symptom did not appear with us till five or six weeks after the disease began. An irruption comes out after the disease is gone, which makes them think they have got the itch. This appears in little spots about the bigness of a small pin's head.

AFTER the decease is gone, the belly and legs often swell. Water appears to be contained in the belly. One of the women, whose belly had swelled in ten days to a great degree, was seized suddenly with a fever, turned insensible, and in 30 hours died. This is likewise a symptom of the disease, for I have seen it before any medicine had been given.

WHEN the patient is recovering, a hectic fever often seizes him, in which the pulse sometimes beats above a hundred in a minute ;

minute; and yet he has not one complaint. I have seen in a case of this kind the pulse at 110, and the thermometer not raised above 99 degrees. This hectic fever keeps the patient from recovering. Sweatings in the night-time often attend this hectic state.

THE change of weather, from heat to cold, made always a sensible alteration in the symptoms. In hot weather they were more severe, and the disease inclined more to the continued fever. In cold weather they were less severe, and the disease inclined more to the ague. These changes were to be observed twice or thrice during its course.

THIS disease altered considerably since its first appearance; it changed more towards a regular ague. It was common about the end of September to see a regular ague commence at the first attack. The delirium that attended it at the beginning,

ginning, appeared no more, the severe pain cross the region of the stomach left it. I had then three or four quartans, which never made their appearance at the beginning. So that at that time it differed not very much from a regular ague.

THOSE who approached nearest to the regular ague had often no cold fit nor shaking; but began at once with the hot fit. Boerhaave says, in his 956 Aphorism, that the cold fit is so absolutely necessary to the disease, that whoever can stop that, will stop the rest of the paroxysm. Here we see that nature stops it, and yet we find the rest of the fit goes on notwithstanding its absence.

AFTER this distemper had been cured many days, I have observed a small attack, at the usual time of taking the fit.

RELAPSES were never more frequent in any disease than in this; the least irregularity

larity of the convalescents, or dampness of the air, brought it on again. What I had before observed in the Zealand agues is confirmed in this, whoever has had it once ought always to dread it again.

THE diagnosis is plain from the enumeration of the symptoms. The prognosis altered according to the state of the disease. When the disease approached near a continued fever, or the attacks were very severe, the patient was in great danger. Where it inclined to the intermittent it was less dangerous; yet still judgment ought to be cautiously given, as the disease was so changeable. When the patient had fallen into a fit, such as I have before described, the prognostick was of the most dangerous kind, for I have not yet seen one escape.

As to the cure there are two different states, and therefore two different methods of management; the state of continued or remittant fever and the state of intermittency.

tency. Our whole design in the first ought to be, to bring it to the second. The disease is at first to be treated as an inflammatory fever. By keeping it down, it insensibly of itself turns intermittent. For this purpose, bleeding, vomits, blisters, vegetable acids, nitre and other cooling medicines, are proper.

BLEEDING is certainly of great use, to answer the end proposed. The quantity ought entirely to be regulated, by the hardness and fullness of the pulse. The consequence of bleeding is this, that the sweating is more plentiful and the pulse more calm in the interval. The disease sometimes intermitted at first, but then the pulse was full, or the fit severe. Bleeding, there, I found likewise necessary. But if none of these two happens, and the sweating after the fit was plentiful, I never advised it, as it might be a means of stopping or lessening the evacuation by sweat.

VOMITS were of the greatest use in this disease. The natural vomiting that attends the disease indicates this medicine. By them that great quantity of highly rectified bile discharged upon the duodenum and stomach, and which produces that burning pain felt there, is thrown out. But this is not all, whoever sees their effects but in this light only, sees them but dimly. Their power seems to extend much further in the cure of all fevers. A vomit is to be looked on as a mechanical power, shaking the whole body, and opening all obstructions of the skin. Hence, if they be not very considerable, after the operation, a plentiful sweat breaks out, which brings the disease to a remittant, and sometimes puts a stop to it.

NOTHING was more useful in changing this disease into an intermittant than blisters. While the fits were severe, or a fever still continued in the interval, they abated

abated both. They did not put a stop to the paroxysms, but they made them more easy, the sweating more plentiful, and the interval more calm.

ACIDS, nitre, &c. were of use during the fever. Vinegar whey was of advantage to assist and promote the crisis by sweating.

IN this part of the disease, then, all our intention is to lower the disease from the feverish extreme to the aguish. When that once happens, it is easy to deal with it. At first perceiving the crisis to be generally by sweat, I endeavoured to follow nature, by helping the work on with sudorificks, and keeping up the sweat for a long time. It sometimes succeeded so far as to stop the return of the next fit, but then it generally recurred in four, or five days. Sometimes it changed the disease more to the continual, so that finding little success in this method, I left it off.

WHEN once the pulse intermitted, the Peruvian bark was the medicine used by all to put a stop to the disease: Its virtues well deserve such an universal use. It is proper to mix some hot penetrating body along with it, and nothing deserves that title better than the *sal armoniac*. With this last medicine alone, I have cured many, and where it succeeds, I think it does its work more compleatly, than the bark. Bitters and riding are necessary to compleat the cure.

BUT if such a fit as I have before described attacks the patient, I do not yet find that medicine can help him. It seems to be the certain forerunner of death. All that I have ever yet seen applied has had no effect, nor does the quick advance of the fever, of the symptoms and of death, give us the least reason to hope for a remedy.

THE

THE head being so soon affected, and a purging attending it, would make me think *à priori*, that the brain and intestines were greatly disordered; on this account I opened one, who from a fair intermission of five days, and without any symptom, but that of a very gentle purging, was seized in this way in the morning, he turned insensible and speechless so soon as attacked, and died before night. There was not the least inflammation any where, about the *Cerebrum* or the *Cerebellum*. Nor were the intestines in any part altered from their natural state. This shews that the disease and cause of death lay in the fluids.

Quæ. Whether a great quantity of the bark thrown into the vessels at this time, might not have been of some service? at least it could have been no worse with them. I have had two of them with intermissions some hours before death. But

then I did not know that the fit would return; for if it had not returned, the crisis might have been disordered by the Bark. As the case is desperate, it ought to be tried.

So much for the cure of the disease in general; the symptoms next require our consideration. The pain of the head gives the patient great uneasiness. To relieve it, two small blisters on the temples were of the greatest efficacy. I was led to this from observing that a very slight inflammation brought upon that part, by applying the outer skin of a lemon, cut off very thin, often relieved a headach. It had all the success that I could wish; for it has not once failed, tho' I have applied it to great numbers. It seems, that the nearer blisters are applied to the part affected, the surer are their effects. In the same way I have relieved one of a periodical pain in the eye every day, after his fits were stopped.

I HAVE

I HAVE ever since that time used these blisters with great success. A girl about 10 years of age had a fever, attended with want of rest and a continual pain in the head. The fever went off on the 13th day; but these two symptoms continued. I applied blisters to her temples. In three hours the pain disappeared, and she slept well afterwards.

THE irruption that appeared after the disease was gone, commonly disappeared of itself. If it did not, a little gentle physic was given.

THE watery swelling of the stomach, and belly, and legs, was an obstinate symptom. One who had a swelled belly was relieved from it, by falling into a natural purging. This points out the method of cure by purging, after which corroborants are to be used.

As for the cure of the hectick fever, that came on after the disease was gone; blood-
ing was even then beneficial, if the pulse
would admit of it: their blood was fizy, with
a thick jelly over it. Blisters were of the
most use in removing it. It often did recur
after it had retired, and stuck by him not-
withstanding all endeavours to the con-
trary. A regular diet, gentle exercise, and
length of time did at last remove it.

THOSE medicines bid fairest for prevent-
ing this disease, that have the greatest share
in the cure. Bark and blisters, gentle ex-
ercise and a little red wine, and shunning
the morning and evening dews, were the
principal rules to be observed. It was ge-
nerally allowed that punch rather gave a
tendency to this disease.

THE following rules were drawn up, at
the desire of the commanding officer, for
the advantage of the soldiers, and were
thought to have good effects.

R E G I-

REGIMENTAL ORDERS,

For the prevention of this disease.

I. **A**S the manner of lying, by making the bed on the ground, seems to be one of the chief ways, in which this disease arises; It is ordered, 1st, That each dragoon raises himself from the ground 2 foot, by making a bedsted to lye in, of hurdles; and that it shall be as open below as possible, for a free circulation of air. 2d, That no man shall lay his cloaths which he throws off on going to bed upon the ground, but hang them at a distance from it. 3d, That no man shall lye in a tent; nor shall sleep on or near new hay.

II. As the method of living, at present, seems to assist the cause of this disease, It is ordered, 4th, That the dragoons shall be obliged to cook their own kettles every day.

day. 5th, That they shall shun eating a great quantity of vegetables, especially those of the watry kind, butter-milk, &c. and shall drink no water without it be first boiled, and a little brandy or gin mixt with it. 6th, Every thing that is hot and drying is good; such as onion, garlick, mustard, pepper, &c.

III. THE dragoons, trotting out the horses, morning and evening, will prevent, or shake it off, if but slightly caught.

EVERY man's own reflexion will furnish him with other particular rules, which ought all to tend to this point: to correct the dampness of the air without, and counteract its effects on the body by a proper diet.

To know with certainty the cause of a disease, is of great advantage in the cure. But our outward senses are generally too gross, and the faculties of our mind too weak,

weak, to attain this knowledge. Those principles of diseases that lurk in the air, or in the human blood, are never the objects of our sight, and but seldom caught by reason. Fact and experience are the physician's surest guide in the cure. The cause, as it is but seldom known, is but seldom in view. If we are to guide ourselves by it in practice, we ought to indulge in no hypothesis, but mount to the certain knowledge of it by the strict steps of unerring fact and just reasoning. Where it admits of clear proof, it brings great satisfaction to the mind, and advantage to the physician.

THIS disease was scarcely known to the British foot about Endhoven, or to the Hanoverian troops that lay towards Grave. The cause of it then can be nothing very subtle in the air, else five leagues would make no great odds. It must be something gross, something that depends on the situa-

situation; for in proportion as we come lower down, in proportion it increases.

ON examining facts we'll find, that this disease answers exactly to the moistness of situation and of air. The cantonment of the Grays was more watry than my lord Rothes's, and that than the Duke's; so their sickness was in proportion. Sir Robert Rich's lay betwixt and along two morasses, that of Boisseduc, and that which runs a great way up the Maïse. This situation was vastly damper than ours, which scarcely reached to the first of these two; and the consequence was, that their numbers always doubled ours.

AGAIN, each regiment observed in its own quarters the same rule hold true, that the damper they were, the more sick they had. Sir Robert Rich's had one troop, which lay on the dyke betwixt the two morasses, where not one man escaped this disease. The nearer they approached

proached to our quarters, the fewer sick they had. We had four times more sick in the three troops at Berlicum, than in those at Middleroy; which is a great odds for the small distance; and even there the difference of situation made such odds, that the colonel's troops had thrice as many sick as the general's.

Thus with a tolerable degree of certainty any one, from these facts, may see, that humidity is the great cause of this distemper; but the question must be put without all doubt, which, I think, I am able to do. I had kept, since we came into cantonment, an exact register of the dampness and dryness of the air, by the help of a hydrometer; and the numbers of our sick kept pace, as far as any thing of that kind can do, to the humidity of the air. From the 29th, O. S. of June, to the 12th, O. S. of July, we had not one man taken bad. During this time the air was never very moist, tho' not so dry as what
it

it used to be in my tent during the day-time in camp. So that taking day and night together, the moisture of my room surpassed the moisture of my tent. On the evening of the 12th, my hydrometer fell very low, and the air was considerably damper than ever I had yet seen it in quarters. From this very night this present distemper began in our regiment; for that night three were seized with it. It continued for eight days damp weather; and the number of those taken bad every day encreased. The 10 days that followed were dryer; during which time, not so many were taken bad as before. Two days then followed of damp weather; in which time our numbers increased. Then on the weather's turning dryer, the disease abated. The same equal pace did this disease keep afterwards with the moistness of the air, so far as we can expect any thing of that kind to do; for I am not sure whether every person will feel the disease the same day

day that he receives the infection; or if he feels it, will remember exactly the day.

Nothing can be more curious and satisfactory than to observe a distemper, where there was none before, arising with the humidity of the air, encreasing as it encreases, and diminishing as it diminishes. Nothing more certain than that this distemper is owing to it; and that the same power which lengthens the cat-gut, affects the human body.

This last proof puts the thing beyond all manner of doubt, that the moistness and humidity of the air is the origin and cause of this distemper. What before was a reasonable guess, is made clear by this to a demonstration. However, without keeping a register of this kind, endeavours to find out and give the cause of this distemper, falls short of proofs necessary for entire conviction.

ALL

ALL the other causes then alledged for this disease, are only to be looked on as assistants to this, if they have any power. That the eclipse of the sun, which happened about that time, and was looked on by many as the origin of this disease, was not the real cause, appears plain from this, that the distemper began on the 12th in our regiment, and the eclipse did not happen till the 14th. But that this might have influenced the cause, and brought on a greater humidity in our atmosphere than otherwise would have happened, is in no way contrary to sound philosophy. We find the moon is the cause of the tides, and that she attracts and draws towards herself that mighty mass of water. When she is in conjunction with or in opposition to the sun, she has then added to hers the attraction of the sun; both which conspiring, produce the spring-tides. When we observe her force so great as to move the sea, may not we reasonably conclude, that our
atmos-

atmosphere which is 800 times lighter than water, and all watery particles that float in it are drawn towards the sun and moon, when in such close conjunction, and acting in one streight line, and by their united attraction, suspended in the air; but when they once separate, the watery particles, not being any longer suspended, fall down towards the surface of the earth in rain or heavy moisture. Hence seems to be the reason of that common observation, that rain generally follows eclipses. Heavy rains fell the day after the eclipse, and for some time after.

As for that other cause, the change of the soldiers diet and their eating with the boors, it might act as an assistant, in disposing the body to be more easily affected by the humidity, but it could never be the real cause; because those who mess were seized with it as well as those who eat roots, butter-milk, &c. The boors likewise, who lived in their ordinary way, were affect-

ed by it. Eating and drinking, as assistants, probably had some effect. Officers were not seized in the same proportion as soldiers; for those eat, drink, and lie better than these. Drinking moderately certainly counteracts the cause of the disease in some measure, for it was a general observation in every regiment, that those seized at first were the soberest men. But the cause of the disease still acting, at last spirits could not protect them from it. As for lying well, that certainly had its effect, and I am convinced that several natural sweats, which I had in bed, freed me from the distemper, when it had already begun its attack.

It has been thought that this disease arose from the putrid state of the marshes round us. That this moisture was necessarily attended with putrid effluvia, and that the disease had many of the symptoms of putrid fevers was most certain, for heat and moisture will occasion putrescency both
within

within and without the human body : But that it primarily took its rise from humidity appears too plain to admit of any dispute. Besides the great rains which fell about the time of the eclipse, must rather have diminished the quantity of putrid effluvia, at the same time that they encreased that of the watry. Again, vegetables, butter-milk, punch, &c. would rather have resisted the effects of putrescency, while an animal diet would rather have increased them ; but the contrary to this happened. If it had been a putrid fever it must have been more infectious ; it must soon have been conveyed to the rest of the army.

HAVING then considered that the humidity of the air is the sole and only cause of this distemper, let us try if, advancing by regular steps and experiment, we can find out its method of acting on the human body.

WATER lengthens and unbraces animal substances. This is easily seen by soaking in water leather, dried gut, &c. for they not only become long and lengthen on the smallest force applied, but lose the elasticity or power to contract themselves when stretched. The steam of water seems to relax more, than water itself. When we want to relax a part that is swelled, we don't order the part to be dipt in the fermentation, but that flannel soaked in it, and well wrung, shall give it nothing but the steam. Nay, I have found by experience that the steam itself confined so as to act on the part, relaxes more powerfully than the former. This is owing to these particles being more minute and subtile than those of water, and of course penetrating further. In rising these particles acquire a repellant force, which may assist them in entering and affecting more strongly the human body.

THE humidity, or moisture in the air, is nothing else but subtile particles of water, floating in our atmosphere, and therefore must have the effects before described; the human body is to be looked on as continually surrounded with a fomentation, which relaxes, lengthens, unbraces its solid fibres, more particularly those of the skin. The blood turns more poor and watery, from the watery particles being mixed with it, and the impaired vigour of the solids. Thus the fluids are not propelled with their usual force, and the circulation turns more languid. Hence the reason is plain, why the spirits should droop in moist weather.

BUT that nothing may be taken for granted, which is not proved by experiment, I find that my pulse beats slower in damp weather than in dry, and that by a seventh part, supposing heat and every other circumstance the same. In moderate

dry weather it goes at the rate of 76 beats in a minute, whereas in moist weather it sinks to 67. It is probable, that it beats stronger too in the former state; but as we have no such exact measure of its force, as we have of its quickness, we cannot be so certain of this. The former alone will serve our purpose. It appears from Swenke's observation, that the medium of a Dutchman's pulse is betwixt 50 and 60, whereas in this country it is betwixt 70 and 80. Let us see what will be the consequence of this in the human body.

By regular perspiration, the health and life of man is preserved. It is by the pores of the skin that those noxious particles, rendered unfit to circulate any longer, are thrown off. When these are retained, diseases immediately succeed. To carry on this salutary work, two things are requisite, that the vessels shall have a proper force to throw off the necessary quantity, and that the mouths of the perspiratory vessels or pores

pores shall be open. By a failure in either the perspiration is stopped or decreased.

At last we are led insensibly to this conclusion, that by the moistness of the air the solids are unbraced, and the perspiration retained in some degree. If in a greater than health can permit, the blood is inflamed, the arteries contract more quickly, that is to say, a fever is produced.

BESIDES this moisture may have other methods of acting on the human body that we are less acquainted with. Its affecting us so soon makes this probable: Perhaps, their small particles may be fitted to block up the pores, and so hinder the perspirable matter from getting out. Perhaps, too, the repulsive quality may in some measure retard the free evacuation of that liquid, which comes itself from the skin, as an invisible vapour. The air seems to be capable only of a certain quantity of

F 4

these

these repulsive particles, owing to their repelling one another, which gives the last reason some degree of probability.

HOWEVER that be, the relaxed state of the pores and vessels, especially if it happens suddenly, must cause a stoppage of perspiration, which will operate according to the present situation of the blood; when that is full of acrid salts, and oils, as was the case with our troops, after much hot weather, a fever must immediately ensue, of a nature something betwixt the inflammatory and putrid, resembling the former in the first days of its appearance, as we see from its bearing bleeding so well, and the latter in the more dangerous part of the disease; for I imagine that the mortal paroxisms which carried them off was owing to an immediate putrefaction of the blood.

When the fever is once produced, the heart and arteries contract themselves with greater force and quickness than they did before; this force at last overcomes the resistance of the vessels of the skin, which are greatly

relaxed, and for a sweat follows. On this the fever remits, but the same relaxation of the whole body still remaining, the perspiration is again retained, again the fever arises, and again, in due time, ends in sweat. Thus the scene is varied from fit to remission, from remission to fit, and often with the greatest regularity. Hence this present remittant fever seems to arise.

THE same cause must serve to account for the intermittants in which this disease generally terminated, and for agues of every kind. The cause of the disease, and the return of the paroxysm, is attributed to a gradual secretion of the acrid bile in the primæ viæ, which when accumulated to a certain quantity necessarily brings on the fit, by mixing again with the blood. That there is much bile separated in the disease, and thrown out upon the primæ viæ, is most certain, but that is only the effect, and not the cause, of agues. Humidity is the general remote cause, and a relaxa-

relaxation of the fibres the proximate cause of intermittants. Hence a retention of the perspirable matter, which will produce a fever sooner or latter, according to its own acrimony, or quantity, the degree of inflammability in the blood, or sensibility of the nerves. From a compound ratio of all these arise quotidians, tertians, quartans, and irregulars. Hence those who labour under quartans require much stronger doses of vomits and purgatives to operate on them, and they are more slowly affected by all kinds of medicines, from the torpid state of their solids and fluids. Hence the quartans, so common in Holland, are rarely met with in North Britain. Hence the quotidian is apt to become a continual fever, especially in warm weather, and with warm medicines. Hence the reason why sudorifics prolong the intermission more certainly than vomits or purgatives, which would not happen were the cause lodged in the primæ viæ. From this view of the cause all their peculiarities can only be explained.

IN

IN the German campaign, about three weeks before we decamped, a remittant fever appeared amongst us, and continued after we came to Ghent for two or three months. It was almost similar to this in its symptoms. The pulse was somewhat lower and harder than this: the crisis was generally by a sweat, and often by a plentiful bleeding at the nose, which I have seen but once in this. It ended in a continued fever; this has already almost an irregular intermittant. These are the most remarkable differences betwixt the two, which otherwise have the greatest resemblance. This present disease does not appear to be infectious; for the contagion did not spread in my hospital, nor were the nurses seized with it. From some instances of husbands and wives taking it, one after the other, it would seem that the sweat of the one may affect the other, when they lie together, but these few instances were perhaps owing to their being

ing under the same circumstances of moisture. About the middle of October, the disease changed almost to an intermittent; it was about the end of this month there was three or four frosty days, in which time the disease greatly diminished, and none were taken bad. In November intermittents still subsisted, but remittants had almost disappeared. In December the remittants were scarcely ever seen, and the intermittants had greatly decreased though there has yet been no settled frost.

S E C T. IV.

On the Lumbago.

IN the beginning of January, 1743, when the English troops lay at Ghent, the rheumatisms were very frequent. That particular species of the rheumatism, called the *Lumbago Rheumatica*, showed itself, often. There were five dragoons in Sir John Cope's regiment seized with it, and the other

other regiments in garrison had their share. This, I believe, is the first account of this distemper appearing as an epidemic.

SYDENHAM has accurately described it. The pain sometimes strikes down from about the kidneys to the *os sacrum*: Often towards the articulation of the *femur*, and down the thigh; at other times it runs across the belly to the bladder, much the same way that the ureter tends. I have seen it attended with a degree of fever, tho' 'tis oftner without any. The patient is obliged to keep his body in a crooked posture, and he suffers much pain when he endeavours to sit or stand erect.

THERE are many reasons that make it doubtful to me, whether ever the ureters are affected; in the inflammation of which that great physician seems to place the disease. It rather appears to me to be an inflammation, or perhaps a rheumatic ob-

obstruction of the ligaments of the spine ; and probably too, of the *musculus transversalis dorsi*. The analogy of the other parts which it often seizes, as the knees and ankles, convinces me of this.

At first I endeavoured to cure the disease with bleeding, physick, soap pills, purgative clysters, &c. but with very bad success ; at best the cure was slow. I cannot say that I ever pushed bleeding so far as Sydenham orders it, viz. five times at proper intervals ; for that method seemed to me too tedious. It appeared more reasonable to pursue the cure by topical medicines, than to alter the whole crasis of the blood : I therefore used, and with great success, the following liniment spread on leather, and applied to the part affected.

℞. *Pul. sem. cumin. chamomel.* ʒij. *sal c. c.* ʒss. *campb.* (*solut. in sp. Terebintb.* ʒij.) ℥i. *ung. sambuc.* ʒiii. *sapon. nigr. Commun.* ʒi. *M. ft. liniment.*

I DOUBT not but other medicines of the same class may answer the design as well; but as these happened to be the first I used, and answered the end, I kept to this formula. It carried off the pain in 24 hours, and I had no occasion to repeat it twice, but to one man.

AT this time I was called to a dragoon, who, besides the *lumbago*, had rheumatic pains in both knees and ankles, with a strong and frequent pulse. After bleeding, the liniment was applied to his knees and ankles, in order to discover if it acted only on the part to which it was applied, or if it was absorbed into the mass of blood, and corrected its peccant nature. Next morning the pain had left these parts which the liniment touched, but had taken possession of the articulation of the *femur*; the *lumbago* was likewise worse. The day after, things were in the same situation. Having now seen that
the

the liniment acted only on the part to which it was applied, I made the same application to the *lumbago*. It went off by degrees, and in two days was entirely gone.

Mr. ——— had a patient whom he had blistered for this pain, but with very little success. A dose of physick brought back the pain as severe as ever. Having informed him of the success that attended this warm application, he applied it to his patient, just above the new skin that had covered the blister'd part. In two days the pain was quite removed.

I HAVE applied this liniment with equal success to these pains that often attack articulations that have been luxated. I once tried it with good success in the latter end of a sprain; I once applied it to a pain of the breast from a stroke, and after pectoral medicines failing, it removed the complaint. I have since continued this practice

tice, with great success. Mr. Gibb, aged 75, of a strong constitution, had been for 10 days in great pain with a lumbago; he had been blooded, and got *G. guaiac.* and other sudorifics without any success. Blistering gave him a little ease; but it returned again. I ordered the liniment, and in a few hours the pain was much abated; the second day he could even walk. The fourth day it was applied again; the pain retired gradually.

S E C T. V.

A particular species of mortification.

TOWARDS the end of September, 1743, in the German campaign, the allied army was attacked with the remittant fever already described, about three weeks before we left camp, in order to march for Flanders. This obliged us to leave all our sick to come down the Rhine in bilanders. About thirty of these sick

that came down in boats from Newitt hospital, were seized in their passage with a mortification in their feet. It happened to those chiefly who had been much reduced by fevers, and particularly the foregoing epidemic camp remittant fever.

THE symptoms of the mortification, as described to me by themselves, were these: the toes and feet turned benumbed, and lost all their feeling; they next began to swell, and had an œdematous appearance; afterwards they seemed to the person as if pricked with needles, and at last became blue; the skin still continuing untouched. When an incision was made into the part, the *membrana adiposa* was found mortified. This mortification first began in the points of the toes, and spread itself gradually over the foot.

THE common kind of mortification makes its progress very quickly, and if not stopt, kills the patient in a few days. But
it

it was remarkable in this species, that the toes and feet would have been mortified for two or three weeks, without making any considerable progress; for the most part it had gone no further than the *membrana adiposa*. In making the incision, the skin was always found entirely sound above, but the *membrana adiposa* quite black; in which state it would have continued, after the incision, for a fortnight, without either casting off, or making any progress. The patients were generally quite reduced, and their pulse very low.

THEY were treated only with fomentations and cataplasms. The bark was never try'd, which certainly would have been very successful, as their pulse was quite sunk, and the natural warmth had not only left the part affected, but likewise the whole body. Most of these patients died.

THE cause of this mortification appeared to me to be this: the sick, for the most

part, had nothing to lie on but straw, which, in these boats, was always wet, and one blanket to cover them, which was not sufficient to keep them warm. The circulation languishing in these people, reduced to such a low state, and exposed to cold and moisture, it was no wonder that it was entirely stopt in these parts, where the heat has least force, viz. in the toes and feet, and in these vessels where the fluids are the most unfit for motion, viz. the pinguedinous. Hence a gangrene in the membrana adiposa of the toes and feet. The causes were not strong, and therefore the effects were slow. The moderate cold continuing, helped to retard its progress; for that is an enemy to putrefaction, and hinders the parts already putrefied to affect the neighbouring.

As there is a strong resemblance betwixt this species of gangrene, and that to which old people are subject, I shall relate a case of the latter, where life was continued for

for some months by art, when the constitution did not allow of a cure.

Mr. ——— aged 69, of a lax and debile habit, had from that cause, and want of due exercise, been subject to a hectic feverish disorder, and recovered by the use of *tinct. cort. peruv.* and *tinct. rhar. amar.* with constant exercise in his coach. He had continued this course in general for three years, with a pulse about 90 in a minute. During this time he had a feverish fit, attended with a small ulcer in the point of his great toe. This had generally a livid colour, and in six months was skinned over.

DECEMBER 12. 1757, had several stools with a dose of his rhubarb, and at night had a feverish fit.—13th at night had a cold fit and then a hot one, with a small unequal pulse, and a sweat in the morning; & vomit.—15th flow at answering; white tongue; vesicles were now discover-

ed on his toes and sole of his foot, which when opened soon turned livid. Pulse, 96 in the morning and 108 at night. *R decoct. fortissim. cort. peruv. coch. iij. tinct. cort. peruv. coch. 1. M. cap. tertia quaque hora.* The *catapl. aromatic* and *sp. vin. campb.* were constantly applied to his feet. As this mortification seemed to proceed from a weakness of circulation, I could not advise scarification, as that, by letting out the blood, must have weakened the part still more.—17th, pulse weak, and 112. Makes water frequently, and in small quantities, probably owing to some acrid salts in the urine. His speech for some days has gradually turned slower, and is now altogether stopped, from a palsy in his tongue. As he had been of late years very temperate, and his whole complaints appearing plainly to proceed from a debility of circulation, I was convinced, that a free use of pure wine was now necessary. He began to take it with his bread-berry; and, after the first dose, his pulse fell to 96.

This

This effect of wine I had seen before, in cases of great weakness. After this he got it frequently. 18. Pulse stronger, and at 92. The mortification seems now stopt, which shews that the bark could not produce its effects till the pulse was raised by the wine.—22d. Pulse has been between 90 and 100. The stimulus to make water gone off. Pulse turns weak if he wants his wine longer than 3 hours. It is mixed with berry, sago, or rice flour, with some jelly of cock's broth or hartshorn. He has been using camphorated spirits, and oil outwardly, to his throat; and in his mouth *sp. lavendul.* and *suc. salviæ*, and makes attempts to say, yes; or, no.—

JANUARY 5th. The suppuration on his feet going on very slow; has spoke plain. Pulse is much weaker. This night his pulse fell very low, and every half minute he had long and high inspirations, such as people have at the approach of death. These were removed by a large dose of strong wine.

wine. We now began to nourish him by injections of strong broth. In this way he was supported, the suppuration scarcely advancing, notwithstanding the use of the bark, which he now began to lothe, till March 20, when he died.

An uncommon symptom once appeared to me in a mortification of the toes. A dragoon in my hospital was seized with a mortification in the points of his toes. By the use of the bark and cataplasms a suppuration appeared; when all of a sudden he was seized with a locked jaw, and a severe pain and inflammation of his throat. His pulse was quick and full. He was blooded, and his blood was inflamed to a great degree, and was fizy. His heart began now to bound in a prodigious manner, and with great force. It happened every two or three seconds, and was very visible: he said, that it was like to choke him. His pulse was still full, and he was again blooded. A great sweat appeared. He continued

continued under these symptoms, and quite sensible, during 24 hours, without being relieved by any medicine, and then died.

S E C T. VI.

Of the small-pox.

DURING the eight weeks that the British troops were cantoned in their march to Germany, the Queen's Dragoons were quartered in the Pais de Limpurg. Some few were attacked by the measles, and small-pox; and, in general, these diseases were of a good kind. One case that occurred was pretty remarkable.—

SAMUEL RYLAND, who never had the small-pox, was sent orderly to Aix la Chapelle, which was about 18 miles off, and lay all the time that he was there in the room with the former orderly man, who

who then had the small-pox, and not a bad kind. On returning home, he was wet, and much fatigued. He got drunk that night. I saw him on the 18th of April, two days after he came home. He complained of a pain in his head and back, with a great inclination to vomit. His pulse was strong and feverish. He was blooded that day, and got a vomit.—19th, severe pain in the small of his back, and anxiety about his heart.—Still sick.—I thought that I observed a beginning eruption on his breast, which I concluded was the small-pox.—20th, About noon, not sensible. His breast and back covered with purple spots. His pulse low and quick. His throat had been very sore within, and when viewed, seemed to be much swelled, and of a white colour. In each inner canthus of the eye, the tunica albuginea was protruded a considerable way out, and was greatly inflamed. Had been worse since yesterday in the afternoon; had vomited much, made no urine, and spit up much
defluc-

defluclion, and a great deal of blood with it. His tongue was black. He died in two hours.

IN this case every thing looked like the small-pox; lying in the room with one who had it; falling sick about the regular time; pain in the throat, back, and anxiety of the heart; and the appearance of an eruption on the third or fourth day, shewed evidently, that the disease originally proceeded from the infection of the small-pox, and yet no eruption ever appeared.

It is probable, that excess of fatigue, a stopt perspiration from being wet, and a quantity of ardent spirits superadded to the natural effects of the variolous matter, had brought on such a speedy putrid state upon the blood, that it had neither time, nor, perhaps, was capable of separating the variolous matter.—

FROM

FROM this case we may learn, how much the nature of the small-pox depends on the management of the person during the state of infection. All the rest escaped easily. This was the most malignant that I have ever seen, and probably owing to the fatigue, cold from moisture, and excess of drink, causes that perhaps were never so powerfully combined before, and followed with equally powerful and uncommon effects.

WHEN the British troops were quartered in Holland, 1747, the small-pox was epidemic. I had an opportunity of trying the purgative method in the secondary fever of the small-pox, but without success.

MISS ——— was seized with the small-pox, confluent in the face, and coherent over the rest of her body. The pustules were of a small kind, and never filled well, being always depressed on the top. On the

the 9th day the secondary fever appeared. On the 10th the pustules began to turn on her face.—11th, her face began to fall, and her hands to swell. Great inflammation of the throat, and much defluxion, which was more relieved by *sal prunel.* mixed with her drink, than by her gargarisms. *R emplast. epispast. terg.* 12th, she turned delirious. *Phlebot. ad ℥viij. Rep. venæsectio.* *R empl. episp. brach. & crurib.* 13th, the delirium gone in the morning, but returned after the blisters were taken off. *Rep. venæsect. Rep. empl. episp.* To begin the purgative method, *R elect. lenitiv.* 3j. This operated once. 14th, still delirious, *venæsect. ad ℥vj. R elect. lenitiv.* 15th, same. Hands and arms much fallen. Had three stools. 16th, pulse as quick, but weaker. This gave no encouragement to proceed in that method. *R empl. epispast. Appl. catapl. pedib.* Sack-whey for drink.

HER pulse sunk gradually. Opiates gave her no rest. I tried the bathing her feet in warm water, which dosed her asleep twice or thrice, but she soon wakened again. There was a light sediment in her urine to-day. 17th, her pulse sunk, and she died.

A DRAGOON, whose pustules were rather more confluent, and smaller than the former, was likewise put under the purgative method, and got frequent doses of the *elect. lenitiv.* and injections, but the fever never abated. He died on the 14th day after an injection, although his pulse was not weak an hour before he died.

A POOR girl, very deeply pitted with the small-pox, caught them again by attending one in that disease. Though they were of the confluent kind, she had but very little spitting, and no swelling of her hands; both which, by Sydenham, are reckoned good signs, and necessary; but then

then her pustules were four times bigger than any of the former, and well filled. It is only in the depressed pustules, it would seem, where spitting, and the swelling of the hands, are so necessary. She was in no danger.

IN Holland, they often open the pustules of the face to save its features. Why may not the whole pustules of the trunk of the body be opened, to prevent the secondary fever?

ALONG with the small-pox we had a fever with an irruption, which answered exactly to the erisypelas fever of Sydenham. At first I took it for the small-pox, the eruption was so like it; but I soon saw the difference, some coming out, while others were retiring. For three or four days the patient had a pretty sharp fever, which abated much, or went entirely off after the eruption. The pustules contained a yellowish grey matter. They continued out

out about four days, and then dried. I treated them, as Sydenham orders, by bleeding and purgatives, which succeeded well.

A POXED patient took this fever. It lasted for three weeks, during which time fresh pustules came out constantly. After the fever was gone, the pustules formed the dry venereal scab over his body; nor did they retire till after a salivation.

S E C T. VII.

Miliary Fever.

IN the middle of winter, 1744, there appeared in Ghent a miliary fever, which, though not frequent, yet was very mortal. I had but one seized with it. Jewit, aged 40, was taken ill January 11th. I saw him on the 13th. Pulse quick, soft, and weak. Pain in his head, and over his body. Want of rest. Was vomited, blistered,

tered, and got *decoct. serpent.* 18th, Worse:
Has had since yesterday an irruption of
small miliary spots, raised above the skin,
particularly on his arms. Pulse low and
very quick, with laborious breathing. &
Empl. epispast. N^o ij. *brach.* & *Decoet. serpent.*
19th, Eruption still out. Pulse low, and
intermits. Tongue dry. Breathing very
quick. Quite sensible. & *Mixtur. cordial.*
& *Lac ammon.* & *Empl. episp.* 20th, Erup-
tion disappearing. Breathing rather bet-
ter. Tongue black. Sleeps much. 21st,
Has had some natural sweats to-night. &
Decoet. serpent. 22d, Died this morning,
after having sweated all night very plenti-
fully.

HAD this person been blooded at first,
it is probable he would not have lived so
long; for I had occasion afterwards to see
the bad effects of bleeding in this fever, not
one of those who were bled recovering.

THE sudorific method appeared neither to be successful in the beginning, middle, nor end of this fever. From the softness of the pulse at the beginning, I thought that it would have done service. During the irruption, I thought that a stimulus was necessary, as the pulse was weak: or that, at last, it would answer by promoting the natural sweat, which seemed to be a crisis; but I was deceived every time. I have since discovered that sweating, in all irruptive diseases, is attended with bad consequences, probably from carrying off the thinner fluids, which should support and keep up the eruption.

THE solution of *g. ammoniac.* seems to have eased his breathing.

S E C T.

S E C T. VIII.

On the glanders.

IN the year 1744, many of the horses belonging to Sir *John Cope's* regiment of dragoons, were infected with the glanders; and all those that laboured under this disease were shot, to the great loss of particulars, and of the general cause. These motives were sufficient to induce me to attempt the remedying the evil, if possible, by an inquiry into the nature of this distemper.

Our farriers appeared to me, to be entirely ignorant of the cause of the glanders, and as unsuccessful in the cure. Our latest and best writers or farriers, when consulted, gave me no greater satisfaction, as they seemed never to have dissected a horse that died of this disease. They appeared plainly to have mistaken the seat of this

distemper; and a cure settled on such a bad foundation, could not but be very precarious. According to the latest writers, for the preceding entertained notions about it too ridiculous to be mentioned, the seat of this distemper was in the spongy bones of the nose. If that had been the case, the disease, I imagined, would not have been near so mortal as it is, because these bones are all contained in proper capsules of their own, have little or no attachment to the solid bones of the nose, and so would easily, when carious, have separated themselves, and fallen off from the found.

Not being able to get any light in this distemper, from authors, I was obliged to consult nature. With this view I opened the head, for I was sure that the seat of the distemper lay there, of a horse that had been shot as an incurable, or rather, as certainly labouring under this disease; for these are synonymous terms amongst
far-

farriers. I saw the cause, perceived the manner by which the cure was to be effected, committed my thoughts, on that subject, to writing, and communicated them to several. But till I could confirm these thoughts by further experience, I thought it not proper they should appear. I have had no opportunity since of pursuing this subject. Not long ago, le Fosse's pamphlet on this subject fell by accident into my hands. By it I see that experienced farrier had discovered in France, the cause and seat of this distemper, the same way that I had done, viz. by dissection. We will not dispute about the honour of the first discovery; but will agree entirely in establishing the same cause. The latter, and not the former, concerns the public. We have both had the same intention in attempting the cure, though we have proposed different methods to arrive at that end. When mine fails, his, as the most difficult, will very properly follow.

THE appearance that I found, on dissecting the head of the glandered horse, was this. On the solid bone of the maxilla superior, or upper jaw, where it makes the under part of the cavity of the nostril, a caries was formed, which had eat a quarter of an inch in depth, near an inch in breadth, and betwixt two or three inches in length, stretching down directly to the aperture of the nostril. A fatt glandular substance, of a white colour, had grown up from the bottom of the rotten bone, and had matter on it. The membrane of the nose betwixt the caries and the aperture of the nostril was fretted and ulcered in different parts, where the matter had touched it.

THIS is the seat and cause of the glanders, and is probably brought on in the following manner. The membrane which lines the cavity of the nostril, being by cold, fever, infection, &c. inflamed, suppurates, and so leaves the bone bare. All
bones,

bones, when they lose their periosteum, and more especially when the external air has access to them, as here it must by breathing, spoil and turn carious. There appears at first, matter of a whitish green colour, and a bad smell; but at length the bones corrupting more and more, and the disease spreading itself all about by fresh suppurations, the matter appears in greater quantity, of a blacker colour, and more fetid smell. The excretory ducts of the sublingual glands have been discovered by le Fosse, to terminate in the cavity of the nostril. The mouths of these ducts being inflamed, cannot allow the secreted liquor to pass; hence it stagnates in these glands, and causes that schirrous swelling there, that is always observed to accompany this disease. The horse is put to death before the disease kills him; but we may easily guess what would be the progress of the disease, if allowed to run its full course. The blood being tainted by the putrid particles continually absorbed into it, the poor

creature must be emaciated by degrees, turn hectic, and, towards the latter end of the disease, will fall into a flux, that will soon carry him off.

'Tis easily to be conceived how difficult the cure must be, considering how concealed the disease is, and how far up the nostrils the caries lies. 'Tis apparent to every one, how little is to be expected from the common method of farriers, to slit open the nose. Their injection of pepper, &c. must likewise prove very pernicious, as they will inflame the parts more:

WHEN the membrane of the nose begins to be inflamed, most of the fatal symptoms that follow afterwards might, I think, be prevented by plentiful bleeding, cooling physic, and the emollient steams of warm water. We may discover a beginning inflammation of this membrane by the continual snuffing of the horse thro' his

his nostrils; an action in them analogous to sneezing in us, and arising from the same cause.

WHEN the bone once becomes rotten, there is no curing the disease unless we can get at the part affected. I would propose the following method of cure. Diligent search ought to be made with a probe, or stiff bugee, which will be in less danger of irritating the inflamed membrane; for great care ought to be taken to avoid this. If the *caries* can be found out, I think we may go a great way to cure the disease. The first thing to be done after the seat is discovered, is, to convey up an instrument, shaped like the steel pencil-cases that have a seal at their end, and with a sharp edge round the circular part that is analogous to the seal. This instrument might have a canula, to hinder it from hurting the sound parts of the nose. With this all the rotten parts of the bone ought to be scraped off, till it feel hard and
firm

firm under the instrument. This operation ought to be repeated every other day, for two or three times, as found necessary; till such time as we can make some flesh sprout up, which will be discovered by its softness, and leaving a little blood on the instrument.

THE carious part ought often to be washed with a rag wrapt round the end of the probe, and dipt in tincture of myrrh and aloes. Injecting of lime-water may often be used. If there is only one nostril affected, which is always the case when matter comes but from one, I should think that the stuffing it up, and so hindring the external air to get at the rotten bone, would be a considerable circumstance in the cure. The stuffing should be of such a nature, as to suck up the matter for a little while. It ought often to be changed, and the nose well syringed with honey of roses, and lime-water, before a fresh tent is put in. The matter should be drained off
I by

by roweling as near the part affected as possible. As the horse's blood is much affected, I should think it proper to give him, internally, sweet mercury, with gum guaiac, and, after two or three doses, to purge it off with some gentle cooling physic, and to repeat these medicines very often during the cure. The mercury ought by no means to be pushed so far as to bring on a salivation; for that would cause a flux of matter to the part affected, a thing quite contrary to the intention of cure.

As for the swelled, hard, sublingual glands, I don't think they are of any consideration, supposing they should remain in that state; for I don't find that they ever turn cancerous. To resolve them, I would propose to shave the part, to foment it with a discutient fomentation, to rub mercurial ointment on it twice a-day, and to cover it with a poultice containing a considerable quantity of Castile soap.

S E C T.

SECT. IX.

Remarks on gun-shot wounds.

I MEAN only to give the result of my own experience, during an eight years war, in a few general observations, and not a system of gun-shot wounds. I had occasion to see the most remarkable and desperate cases, after the battle of Dettingen, at a small hospital without the gates of Hanau, attended by Mr. Mitchel. These wounded could not be transported down the river to Feckenheim, their wounds being mostly from cannon-shot, and very dangerous.

I APPROVE much of the rule laid down by Le Dran, to scarify the lips of the wound at the first dressing. The inflammation is not so great when this is done. I cut all those wounds which I dressed at the battle of Dettingen, till they bled freely.

ly. When a great inflammation is suspected, I would prefer a dilatation from the bottom of the wound, when it can be done.

A VERY necessary rule is, that the wound ought to be dressed twice a-day when the weather is warm, as often happens on these occasions. If this rule is not followed, vermin will breed in the wound, as I had frequent occasion to see. Besides, if the matter is in great quantity, it will corrupt with heat, enter into the blood, and throw the patient into a looseness: for most of those who die of their wounds some time after they have received them, are carried off by a looseness.

THE orifice of the wound should be the last part of uniting: If the bone is in the least touched, the wound ought not to be allowed to close up; for it will certainly break out again, and become worse than before. I saw many cases in the hospital of Ghent, where wounds had broke
out

out again with carious bones, after being closed up for some time.

It sometimes indeed happens, that by allowing the first orifice to shut up, we can get a more convenient one. Quarter-master Pott was wounded across the ham, betwixt the two flexures and the joint, without hurting either. The outward orifice closed up immediately, and at the same time there was felt betwixt the tendons a hardness, which, by the application of poultices, turned to *pus*. The other orifice was allowed to close, and the wound was cleaned and cured by the new opening. He had for a long time afterwards a pain in the sole of his foot, which certainly arose from the wounding of a small branch of the *nervus popliteus*, part of which goes to the sole of the foot. He likewise had a stiffness in the joint of his knee; for which complaints he went to the baths of Aix la Chapelle. He stayed there three months, and was much better for their use, but had

had not thoroughly recovered the use of that leg when he was killed at the battle of Fontenoy.

I WAS present at a very unusual operation the morning after the battle of Dettin-gen ; when Mr. Wilfon, Surgeon to Sir Robert Rich's dragoons, cut off most part of the spleen from a dragoon. The wound being very large, the spleen had come out, and being inflamed by the cold of the night, it could not be reduced ; there was no possibility to get a fomentation to apply to it. We therefore thought, that the cutting it off was the only means to prevent a mortification. The dragoon, tho' otherwise much wounded, recovered ; and I saw him afterwards in good health. He had no stronger inclination for women than before.

ALL large wounds from cannon, tho' they are only muscular, are dangerous, on account of the great discharge which comes from

from them. Captain Ogilvie received a cannon-shot at Fontenoy, which carried off a large part of the *iliacus* and *psoas* muscles, betwixt the *crista ossis ilii* and the articulation of the *femur*, without hurting the bones or joint. I dressed it in the field of battle, and sent him off to Aeth, where the hospital was. I did not see him for some days, but heard that the wound looked well. On the 8th day I saw him, and found him chearful, but with a pulse so very low that it surprised me. I had been with him only a few minutes, when he turned faintish, lost his reason, and died instantly. As this wound was muscular, it did not appear dangerous to me, or to those who had more time to consider of it. The necessary evacuations, and the great suppuration which came on, had emptied his vessels so much, that he seems to have died of inanition. Had he got the bark to brace up the vessels, and been properly supported, his life might probably have been saved.

ANOTHER

ANOTHER general rule is, where an operation is necessary, it ought not to be delayed a minute. Almost all the operations which were performed at Hanau hospital were too late, the patients being much reduced by the discharge and pain, so that most of them died a few days after the operation. This was not Mr. Mitchell's fault, for he began immediately after he came, which was 10 or 12 days after the battle of Dettingen, to perform the necessary operations, though then a number of the wounded were reduced, which shews how speedily the amputation should be performed, when thought necessary.

ALL fractures of the large bones, if they be shattered into many small pieces by the shot, in my opinion, demand amputation. The inflammation and gangrene, which often follows, make them very dangerous; and the acrid matter, which is separated for a long time afterwards, hinders the callos from forming. I have known few who
I have

have saved their fractured limbs; but many who were obliged to undergo the operation after they were much reduced.

ANOTHER general rule is, that a fracture of a bone near the joint is a desperate case, and requires immediate amputation above the joint. The bone, I imagine, is generally split lengthways into the joint, as I found on opening the leg of a French soldier, who received a shot in the tibia, a little below the knee; the head of the bone within the articulation was entirely split.

I WAS present when Mr. Mitchel cut off two arms by the joint of the humerus; this bone being fractured so near that it could not be taken off betwixt the joint and fracture. Both the patients were much reduced before the operation, and both died some days after. This operation appeared dangerous, even in the most favourable circumstances, considering what a long time

time it takes, how many muscles, and what ligaments must necessarily be cut through.

ALL wounds near a large joint are dangerous, though neither ligaments nor bone be originally hurt. Cornt. St. Leger, a young man of a strong constitution, and used to live plentifully, was wounded in the battle of Dettingen. He retired to Clein Ostend, so that I did not see him till 9 at night. I found that the ball had passed transversely, just under the skin, immediately below the rotula, and came out about an inch from the first orifice. Upon passing my probe through it, I found nothing but teguments above, which I cut through. When the wound was laid open, I found that the ligaments which connect the patella with the tibia, were just touched, and a very little ragged. His leg must have been in a straight line when he received the wound, and the bullet small. I dressed the wound with a pledget dipt in warm *basil. flav.* The wound had bled very little,

nor had the pain been very considerable. By a fall from his horse, his shoulder was likewise dislocated, which could not then be replaced, as it was swelled. As he was tired with the fatigue of the day, I could not persuade him to lose any blood, so desired him to do it as soon as possible. I left him, and he came to Hanau next day, May 18th. I did not see him again till the 23d. He had been dressed with *basil. flav.* but not evacuated in any way. Next day he turned feverish with drought, pain of his head, inflammation and severe pain in the wounded knee. During this fever he was twice blooded.—June 1st, his fever was quite gone off, and the pain pretty much abated. June 3d, There appeared about the middle of the wound a small hole, out of which a great quantity of matter issued, by pressing the internal part of the thigh. The probe discovered a sinus running up along the internal side of the patella, without the ligaments of the joint, passing by the internal side of the rectus, then

then sinking under the membranous and
fartorius, till it lost itself in the vastus in-
ternus. The sinus seemed to reach as high
as where the artery passes through the tri-
ceps muscle. The orifice was enlarged by
a piece of sponge tent. And at every dres-
sing there came out a great quantity of
thick matter, for four or five days. After-
wards the matter lessened in quantity, and
became thin; on pressing, there run out
about an ounce of thin watery matter, not
unlike the synovia. Upon these appear-
ances, his pulse being free from fever, he
was ordered the following boluses five or
six times a-day. *R ther. andr. ℥j. pulv. cort.*
peruv. ʒss. M. He took these for six days,
without any alteration in the matter, and
complaining that they made him feverish
and drougthy. They were stopt, as he
took a severe looseness, and violent bleed-
ing at the nose. Such quantities of theriac
certainly hurt so inflammatory a constitu-
tion, in such inflammatory circumstances.
When the boluses were stopt, the bleeding

at the nose stopt too ; but his looseness continued, probably from much of the matter being absorbed. The sinus was now syringed with *aq. calc.* and *tinct. myrrh.* and compresses laid on it outwardly. The looseness continued till the 14th, when he turned feverish again and was blooded. On the 16th miliary spots appeared. In two or three days the fever went off. On the 21st he turned feverish again, with a low quick pulse, and a great pain in his throat, so that he could scarcely swallow, which never left him. He got a cordial mixture. On the 24th his fever went off. He was now very weak, and his pulse was never quite regular ; about this time the pain of his knee was very great, and the matter very thin. The joint grated whenever he moved it, which made him say, his leg was out of joint. On the 30th the amputation was performed above the knee, by Mr. Ranby, but about an hour after it began to bleed. The dressings were taken off, and some styptic powders applied, but all in vain ;

vain; for the blood being quite thinned, couzed out at every small artery; after fainting away several times, he died about one in the morning. Upon examining the amputated leg, I found the ligaments of the joint in many places destroyed, and the heads of the tibia and femur carious and rough, the cartilages being quite eat off. This was the occasion of the gritting noise.

WHAT a train of fatal symptoms, from so slight a wound, in all appearance! slight I must call it; for the ligaments, though grased, yet could not be much hurt, as they were immediately attended with no great pain, inflammation, or swelling. If he had been blooded soon after the wound, perhaps the fever and inflammation, which did not come on for seven days, might have been prevented. I cannot say that I thought it adviseable to give such quantities of theriac in such an inflammatory constitution. It certainly had bad consequences,

quences, and made the vessels absorb more of the purulent matter.

WAS not the miliary fever owing to the hot regimen? Where the thinness of the matter is owing to a laxity of the solids, the bark is always found to have excellent effects; but here the case was rather inflammatory, and therefore small prospect of success from it. As the orifice was always higher than the bottom of the sinous ulcer, I was of opinion, that an artificial opening should have been made into that part. It lay indeed somewhat deep, but then the vessels and nerves might have been easily shunned. By that orifice, the matter would have had a free and constant passage, the old orifice been allowed to close up, and the sinus, by degrees, been brought into a fleshy part: whereas, the matter was corrupted by stagnation, destroyed the ligaments, and eat off the heads of the bones.

PART

PART II.

Histories of Cases.

SECTION I.

Of the pulse.

CORNET——, after a grand guard, had a severe pain in his loins. His tongue was discoloured. His pulse beat but 65 in a minute.

SMALLMAN, in the third day of a squinzy, had a pulse at 63 in a minute, while he raised the mercury in the thermometer to 101 by the heat of his body. The squinzy broke the day after.

ONION, a dragoon, had broke his leg the day before, and had been twice blood-ed. His tongue was white. His pulse was but 48 in a minute.

A LADY, whose pulse had not been under 98 for many weeks, from a hectic fever,

ver, was seized with labour pains. During these her pulse fell to 80. Immediately after she was delivered, her pulse returned to its hectic velocity.

BEING some years ago in the country, I was called to see a poor woman, aged 50, who complained of a great pain in the middle of her belly. She was drouthy. These were all her complaints. Her pulse was quite natural. I heard afterwards that she died that night.

A PERSON, after a violent concussion of the brain, complained of a great pain in his head. Blood came out of his mouth and ears, and along with it a white medullary substance. His pulse was 50.

A YOUNG gentleman, three days after he got a violent stroke on his head, had his pulse at 40 in a minute.

FROM these facts we may learn, 1st, That pain does not necessarily quicken the pulse,

pulse, but, on the contrary, sometimes makes it slower. 2dly, That the tongue may be white without any degree of fever. 3dly, That pain may be dangerous, altho' it does not quicken the pulse.

— aged 70, laboured under a viscid defluxion for many years, which at last ended in a humid asthma. Her pulse intermitted every third beat; this intermission had been natural to her for many years. The piles appeared, were very painful, but did not bleed. From their appearance her pulse became regular, and her asthma almost left her. Some months after, her pulse turned frequent, but not irregular, without any bad symptoms following. From so seemingly small a cause, what great effects on the pulse, and other parts of the body?

A GENTLEMAN, after a day's journey, had a quick weak pulse, and a general uneasiness; these complaints seeming to come from fatigue and weakness, he was advised
to

to drink some glasses of wine ; his pulse immediately turned calm after this.

A LADY, in the latter end of a hectic fever, when her pulse was very quick and very weak, took some wine ; immediately after this, her pulse turned more calm.

A GENTLEMAN, in the hectic fever of old age, who had lived very temperately for many years, was advised by me to begin the regular use of wine. A quarter of an hour after the first dose, his pulse was fuller, and 18 beats in a minute slower than when he got it. It always had a similar effect on him.

I HAVE oftentimes seen effects similar to these, upon giving wine in low fevers. It is but lately since physicians measured the velocity of the pulse with that accuracy that they do now.

BUT

M
late ha
two o
plained

BUT whence is it, or in what state of the body happens it, that wine produces an effect so very different from its general tendency? There was always, in these cases, a general debility, with a weak, soft pulse, which argues a weakness in the motion of the heart and arteries. These not being able to protrude the usual quantity of blood, must make up, for want of strength, by repeating their contractions oftener, and raising a degree of fever. Wine, which increases the strength of these motive powers, must diminish a fever which arises from their weakness.

SECTION II.

Of the gout.

MR. — had been troubled with the gout for many years, but of late had no regular fits, they lasting only two or three days. February 6th, complained of a confusion in his head, want
of

of rest, and loss of memory. Tongue white, and pulse frequent. Imagining that this proceeded from the gout, his feet were bathed that night.—7th, Nothing better. *Applicent. cucurbitul. humer. sine ferro.*—Feet fomented. 8th, Something better. *Applicent. cucurbit. cum ferro*; by which one ounce of blood was taken away. Feet fomented. Next morning all the symptoms had left him; and the gout was in his knees and feet, which were swelled. This fit continued for some days, and he was quite easy.

My Lord * * * was seized with a fit of the gout and a severe cough. Besides these he had another disease at the same time attended with peculiar symptoms, such as cold fits at night, and gentle sweatings in the morning, want of rest, loss of appetite, bound belly, turbid urine, and dejected spirits. This last disease he had two years before by itself. After an ankle and foot had been swelled and pained for two weeks,
the

the pain went off, and he was seized with a pain in his liver, to inflammations of which he was subject. There were strong reasons to think this pain was goutish; for one night he had a pain in his toe, during which the other abated; and before that, he had been seized suddenly in the night-time with a pain of the throat, which had gone away as suddenly. His pulse continued regular. By the application of warm bladders, in four or five days the pain went off, and left the preceding disease alone. I now ordered him *tinct. rhæi amar. coch. i. unaquaque nocte b. f.* and chamomile tea, which had cured him before. After he had continued in this course for a week, the disease disappeared, and the sweatings abated. Another fit of the gout came on, and lasted ten days. This last fit, I think, he owed to the bitter tincture of rhubarb, which, by stopping the sweatings, giving an appetite, and strengthening the stomach and guts, had enabled nature to discharge the gouty matter.

S E C-

SECTION III.

Anasarca and dropsical swellings.

Hist. I. SERJEANT Newball was seized with anasarca swellings of his legs and thighs, which went off upon the use of jallap and mercury. Recurring afterwards more violently, he got *syr. de rhamn.* with *tart. emetic.*; then a diuretic mixture; but without any success: at length getting cold, his legs swelled to that degree that he could not walk with them, and at the same time had a cough. His legs continued so for some few days, and were again reduced by cataplasms and fomentations. Two or three days after, Jan. 21st, he fell into an apoplectic fit. His pulse was strong and hard. He was twice bled in the jugular that day; his blood was very thin, and of a faint red. Blisters were applied to his head and back, and cataplasms to his wrists and soles

soles of his feet. Upon seeing him next morning, I was informed that he had been sensible from seven at night till one in the morning, that he arose out of his bed, and went to stool to pass a clyster which he had got, and in which there were 2 dr. of *ass. fetid.* He was more sensible on the 22d than the day before; and, on asking him where his pain lay, he pointed to his head. This morning more blood was taken from his jugular, and blisters were applied to his legs. At night his pulse was more weak. 23d, His pulse began to intermit. He had more blisters, and a cordial. At night his pulse intermitted much, and he died about one.

EXPECTING to find a collection of water in his head, we opened it, but nothing was found amiss there; the quantity of water in the ventricles was but very small. Nothing particular was seen in either thorax or abdomen, nor more water contained in any cavity than what is commonly found

K

there.

there. None of his viscera were schirrous.

I MUST own, that I expected to have found a collection of water pressing on the brain. He that is most versant in inspections of dead bodies will know best, how precarious the investigating the causes of diseases is. We thought, that if, during the interval, he had got a strong hydragogue purgative, it might have been better. But now we saw that the water, which we were studying to carry off, was not the immediate cause of his death.

Hist. 2. — THOMSON, aged 35, of a full plethoric habit, about the end of February, came to me with an inflammation of his throat. This complaint abated but very little with all the medicines which he got, and continued with him to the last. In the beginning of March he had a little fever for two days, and when that disap-

disappeared, oedematous swellings attacked his legs, thighs, and scrotum, and there was a collection of water in his belly. For these he was ordered an infusion of *cin. genist. lim. mart. bacc. junip. fol. absynth.* He took this without being much better for some days, or voiding more urine than his drink, for I made him measure both. A natural purging came on, which evacuated his waters by degrees; during this he often took rhubarb. About the middle of March he took a little fever again, which lasted two days, and went off. He had sometimes complained of a pain in his liver; but this went away as his waters retired with the purging. His watery swellings being almost gone, April 8th, he fell into a fit of the apoplectic kind, which lasted an hour, with a redness of his face, pain in his head, slow languid pulse, and difficult respiration. He had three fits that day, and two the day after, and was quite sensible betwixt fits. Matter, mixed with blood, had, for a long time, often come out

of his nose, and his fore throat still continued. His disease, by the symptoms, appeared to be a hydrocephalon. He was often blistered, had much physic, and cataplasms continually at his soles. On the 12th, having fallen into an apoplectic fit in the morning, in which his pulse still continued languid, he died in the evening.

HE was opened; there were about two ounces of water betwixt the dura and pia mater, and about one ounce in the ventricles. There were two polypuses in his heart; one in the right auricle, with its root extending half a foot into the *vena cava*: a large one in the right ventricle, with roots spreading into the pulmonary artery. These two polypuses would have weighed about four ounces; their body was of a pale colour, and fleshy consistence; but the ends of the roots was like the crassamentum of the blood. These polypuses,
by

by causing a stagnation of the blood in the veins, were certainly the cause of the inflammatory swelling in his throat, which was the first symptom, and which always continued, of the bleeding at the nose, of the redness of the face, of the oedematous swellings in different parts, of the water collected in the abdomen and brain, and of the apoplectic fits, which, when assisted by the external compression of the water, became mortal; and yet I cannot see that the polypus shewed itself by any of its most common symptoms.——

Hist. 3. July 16th, 1752, — was seized with a vomiting of a tough glary matter, and a frequent pulse, which was rather low at first, but afterwards rose. A drop-
sy had been forming on him for two months, with a continual stoppage of his water. He had a rupture besides. He got some *laud. liquid.* and two hours after, salts and manna, which passed through him,

and gave him ease. At night he lost 7 ounces of blood. Being too weak to bear purgatives, he was put into a course of diuretics, which increased his urine. He took *laud. liq.* sometimes, of which he thought himself much better. He was seized twice or thrice with such fevers as the former. About the 13th of August he turned feverish; complained of a stitch in his right breast, and shoulder-blade, and felt a pain when the liver was pressed. His pulse sunk, and in five days he died.

WHEN he was opened, his liver was found large and schirrous, his spleen schirrous, and a præternatural bone in the phalx. He never was troubled with head-achs, but used to be like a madman when he got drink.

Hist. 4. ———, aged 40, had a dropfy, dyspnœa, and anasarcaous legs. The first and last diminished by a course of diuretics, but the dyspnœa still continued; for it he took

took a tea-spoonful, once a day, of *sp. ter-
rebinth. æther. mell. opt. ā. p. e.* which,
from the moment of taking it, gave him
ease; and ʒij of each carried off that sym-
ptom.

Hist. 5. — KER, a boy about 14 years
of age, of a thin habit, and consumptive
inflammatory disposition, had been often
blooded the summer before, and by that
means cured of a settled pain in his breast.
He was seized with an ascites and hydrocele
about a month ago. The hydrocele was
hard, and evidently within the coats of
the testicle. About 1. p. m. the water
was evacuated by a trocar, and at 4 it was
almost as full as before. From whence
had this water come so expeditiously? Did
it come from the abdomen? I cannot see
any passage for it, as the spermatic cord
lies altogether without the peritonæum,
though within its duplicature. Was it se-
parated from the vessels of the tunica va-
ginalis? That is the only apparent way;

and yet the quantity was great to come in that short time.

Hist. 6. MRS. — had anasarcaous legs, arms, and face, with a great difficulty of breathing. She got two doses of the following powder. *R Rad. scill. torrefact. Zinzib. ā gr. v. M.* These purged and vomited her smartly, but were not in the least diuretic. All the symptoms went off.

Hist. 7. MRS. —, aged 60, had been troubled with anasarcaous legs for some months. She was ordered the *Ol. volat.* externally, and *Rad. scill. torrefact.* Two grains purged her twice; three, four times; but they never proved diuretic. This method continued, cured her.

S E C-

SECTION IV.

A remittent bilious fever.

MRS. — aged 30, and of a full habit, had been seized December 26, 1753, with a trembling, and afterwards a fever. She had complained much of a head-ach. Her surgeon had taken some blood from her, sweated her with *sp. minder.* and blistered her. On the 3rd, I saw her, and found her pulse about 120, and scarcely of a middling strength. She complained of a constant pain and pulsation in her head, especially when she was in bed. This symptom attended her through the whole course of the disease. She had at times a pain of her side. She throws up every thing. This day she had a cold fit with a hot one afterwards, and some sweat.

R *Em-*

R Emplast. epispast. N° ij. brach. intern. R Mixtur. e succ. lim. & sal absynth.

JANUARY 2. The cold fits come sometimes twice, sometimes thrice a-day, succeeded by an increase of fever and pulse at 130; in the intervals it is at 105, and she is easy, except the beating of her head. Tongue moist and white. Constant vomiting of bile in the fit. Urine in the fit pellucid; in the intervals lets fall a thick sediment. Little sleep, and frequent startings in it. Pulse rather weak. *R Empl. episp. intern. tib.* and every day a chamomile vomit.

4th, PULSE calm in the intervals, an effect of blisters, which I have often experienced.

6th, FITS very irregular. Much bile still thrown up. *R Tinct. ipecacuan. R Tinct. rhubarb.*

8th,

8th, THE pulse in the intervals at 90. Plentiful sweatings after each fit. Good sediment in the urine. No drought, nor pain in the intervals. The primæ viæ have been evacuated very well. Every thing favoured, in appearance, the exhibition of the bark. It was ordered in decoction.

13th, SHE has taken almost two ounces of the bark, but it has not succeeded. She is more feverish in the intervals, and the sweatings are diminished. Her tongue is dryer. The fits still continue. I was now obliged to return to my former method of blistering now and then, and giving a vomit of the *tinct. ipecacuan.* or of chamomile flowers, every day, with frequent doses of *tinct. rhubarb.* These medicines had visible good effects on her, for her pulse was always calmer in the intervals after the blisters; and she had an inclination to eat after every vomit, which she never had at any other time. Each vomit brought up
a great

a great quantity of bile: she was often obliged to take a chamomile vomit twice a day.

25th, THE fits are not near so severe, and the sweatings plentiful. I tried the *elix. vitrioli*, but it had no remarkable effect on the disease. *R Aloes succotrin. pul. rbæi extr. gentian. ā p. e. elix. propriet. q. f. ut f. mass. pilul. ex singul. drach. f. pil. N° xij. cap. tres b. f. in alvi constipatione.*

FEBRUARY 1st, Her pulse has not yet been quite free from fever. The parotid gland of the left side begins to swell with considerable pain: quickness of pulse, and an increase of the pulsation of her head. As this appeared critical, it was brought forwards by suppurative plaisters and cataplasms, and a fuller diet than before.

APRIL 7th, It was opened, and much matter came out.

MAY

MAY 1st, She began now to recover, but still there was a considerable hardness on the gland; the orifice is still open. I ordered her ew-whey every morning, which purged her, and reduced the hardness.

JULY 1st, The hardness has been much the same for three weeks. *R Æthiop. antimon. ʒi. unaquaque nocte b. ʒ.* The Æthiops sweats her gently every night. Hardness almost gone. 26th, Quite gone.

WE see that, in this case, the bark given after evacuations and under the most favourable circumstances, a pulse 90 in the intermissions, lateritious sediment, no complaints, plentiful sweatings, and no drought; yet did not succeed. Had nature not sufficiently disburdened himself of the bilious humours? After these are in part thrown off, and the primæ viæ often cleaned, the bark generally succeeds very well. Was the blood yet sily? That was more probably
the

the case; for I never saw the bark succeed in that situation.

THE *Æthiops antimonialis* had very good effects in removing the schirrosity of the parotid gland. These glandular critical discharges, which were very common in Greece, are very rare in this country.

S E C T. V.

Periodic Dysentery.

MARCH 26th, I saw Mrs.—, aged 30, of a florid constitution. She had been uneasy all the day before, and at night had been seized with a violent purging, gripes, and bloody stools, for which she had got an opiate mixture and the *decoct. cretac.* The purging was now abated, and the blood had disappeared; but there remained a sickness, head-ach, and full pulse. *Phlebot. ad 3xij.* Blood fizy.

Easier

Easier after it. *R Vomit. R Pulv. rhæi.*
b. f.

29th, PURGING abated. Pulse 95.

Tongue white. Pains all over. About
11 *p. m.* vomiting, bloody stools, and
violent gripes returned. *R Aq. menth. sp.*
minderer ā 3ß aq. cinnam. f. v. 3ij. L. L. gut.

xx. This abated the purging and threw
her into a sweat. 30th, No purging, but
gripes still remain. Hot and pulse strong.

Pblebot. ad 3viij. R Balf. lucatell. 3ij. vitell.
ov. q. f. dissolv. in decoct. comm. p. clyst. 3viij.

L. L. gut. xx. M. f. clysm.—Easy all the
day. Pulse 90.—11th *p. m.* seized with a

grewing, after which she became hot.
Loose stools without blood. Pulse strong

and very quick. Not quite distinct. *Pble-*
bot. ad 3viij. Blood not fizy. *R Empl.*

episp. terg.

31st, No sleep. Not quite so warm.

Pulse 100 and rather weak. Loose stools
with a little blood and gripes. Tongue

white. Low, but distinct. *R Aq. menth.*
cinnam.

cinnam. ā ʒij. *elect.* *diascord.* ʒj. *L. L.* *gut.* xxx. *M. cap. coch.* ij. *post unamquamque sedem.* Pain and purging eased. Pulse 100. For common drink *R. C. c. calcinat. ocul. cancr. ppt.* ā ʒij. *g. arab.* ʒʒ. *coq. in aq. fontan. lib.* ijʒ. *ad lib.* ij. The injection was often repeated. About 11 p.m. had another feverish fit with return of fever and gripes.

APRIL 1st, *R Pul. rbæi* ʒj. *calomel. gr.* iij. *M. capiat statim.* Was sick, and vomited this morning. Some fit at the same time.

2d, Pulse 90. Easier. *R Pul. rbæi. R Haust. cum L. L. b. f.* About 11 p.m. her belly was drawn together, and she was uneasy. *Haust.*

3d, PULSE 82 and of proper strength. Urine all along pale. About the same hour this night was very uneasy. *R Haust.*

4th, BETTER. *R Pul. rbæi. R Haust.*

5th, THIS morning a rash appeared on the

the face and arms mostly, with a great itching. Pulse quite regular.

6th, THE eruption gone.

S E C T. VI.

Periodic Cough.

ON the 18th of April my lord ——— was seized with a cough, drought, restlessness, pulse full and a little frequent. *Pblebot. R Aq. cinnam. f. v. syr. bals. ā ʒiv. acet. scillit. ʒij. M.*——20th, Fever gone, but a constant tickling cough remains. Urine turbid, and lets fall a gross sediment. *R Tinct. rhæi coch. ij. R Bals. lucat. conserv. ros. rubr. ā ʒj. pul. gum. oliban. ʒij. syr. diacod. q. s. ut f. elect. cap. magnit. nuc. moschat. quarta quaque hora.*——22d, Cough no better. Always worse in the night-time. Makes but very little urine. *R Spt. mindereri syr. alth. ā ʒiij. acet. scillit. ʒß. M. Cap. cochl. ij. bis in die. R Pil. matth. aloes succotrin.*

*cotrin. ā gr. viij. M. Divid. in pil. n^o iij. cap.
b. f.*

MAY 2d, He continued using these medicines without any effect till this time. *R Empl. episp. terg.* His cough was somewhat easier.—6th, His stomach was foul with asses milk, which he had been all along using. *R Vomit.* After this he began again to his diuretic mixture; I was not sensible that his urine was ever increased. 10th, For some time past he was attacked with his cough regularly about 11 *p. m.* It lasted about an hour and an half, and then he was no more troubled with it till next night. It ended so suddenly, that he knew and told which was the last cough. During the fit, spit up some defluxion like frothy saliva. It seemed to be separated from the trachea, for he could often catch it before it fell into his lungs, and then the cough was stopped for that time. During the fit and some hours after it, his urine was clear, but turbid at all other times.

times. His cough was likewise one night better, and next night worse; and this regularly. Having such resemblance to an aguish disorder, he got a mixture with *sal. ammon. crud.* in it, of which he took an ounce in five days without finding his cough any better; it increased his urine and made it less turbid.

13th, He had been troubled with a sciatic pain for some days; last night it left him, and he found himself much disordered; but by rubbing the part it came again, and then he was easy. The part was blistered, and the pain went away.
R Loboch de lin. R Sem. lin. capit. papav. alb. ā p. e. pro thea.

19th, His cough still continued periodical. To see whether his horizontal posture in bed had any effect, he sat up, and it came at its regular time, and went away before he lay down. It was not the better of any thing yet. *R Tinct. cort. peruv.*

lib. β. cap. coch. i. ter. in die. 21st, This night he missed his fit and never had it again. His urine continued turbid for several days afterwards. He felt the easterly winds and moisture a long time. His tincture was continued for some time for prevention.

THIS disease may be called an aguish or periodical cough, and it seemed to be of the double tertian kind, as every other night corresponded. Agues were at this time common. Mrs. ——— about this time had irregular hot fits, and a hoarseness was a continual symptom that attended them.

BUT why was the aguish matter thrown out by the lungs, and not by the skin? The reason perhaps was, because it did not raise a fever to fit it for that evacuation, and help to open the skin. During the fit the pulse was never quickened above 8 or 10 beats in a minute; and even this
may

may be attributed more to the mechanical action of coughing, than to any stimulus of the matter in the vessels. Perhaps the internal coats of the vessels may be stimulated with what the outward will not, *et vice versa*.

WE may see how effectual the bark is for all periodic complaints. I removed some years ago a violent pain in the ball of the eye, that recurred regularly every day, by the bark. We shunned giving it in this case as much as possible, as we had reason to think that his lordship's liver had been for some years schirrous.

S E C T. VII.

*A humid asthma and suppuration of the liver
and erisypelas.*

MRS. ———, aged 60, of a spare habit, about the end of February asked my advice in an asthma which she had had for three months. She had a laborious breathing, a full strong pulse at 106, stitch in her side, gentle swelling of her legs at night; a considerable quantity of thick defluxion, and a cough. She was blooded, had a vomit, and took squill pills. Her blood was rich and florid, and the loss of it eased her. As her pulse continued strong, she was blooded five days after, and again eight days after that. This removed all the stuffing at her breast, and made her breathing easy and the defluxion thinner. Her pulse still continued strong. She complained

complained of a pain in her left side under the short ribs, which made me think the cause of her frequent pulse lay there. April 20th, Began to complain of a pain in her liver, and in two or three days there was a swelling outwardly, but no softness. May 4th, The pain went off much, the swelling fell considerably, and there came on a purging of variegated stinking fœces, with white matter, great tenesmus, small stools at a time, considerable gripes, binding about the *os pubis*, nausea and sickness. For the first three days had ten stools a day. Pulse 106, and sufficiently strong. Ordered her to drink broth and tussilago tea to defend the intestines.—10th, Pulse 100 and tolerably strong. Has five or six stools a day. Spits up the defluxion easily. Gentle sweatings in bed. The swelling not gone. 14th, Erisypelas appeared on the calf of the leg. Pulse 112. 15th, As she had purged but very little, & *Pul. rhei* ʒj. 16th, Had purged ten times during

the night. Erisypelas going up the thigh, and of a pale red. Great pain in the lower part of the belly. Pulse pretty strong and 112. R *Empl. episp. terg.* At night pulse at 120 and fuller.—17th, Pulse 112 and not so full as last night. Erisypelas much the same. About four stools this night. Allowed her sack whey. Takes asthmatic fits that quicken the pulse. Died this night in one of them.

THE tumour and swelling of the liver seems to have been the cause of almost all her complaints, of her anasarcaous legs, and perhaps even of her asthma, as it retired when the tumour decreased. A suppuration came on and was followed with a new strain of symptoms, which at last were fatal. And indeed I have never yet seen a suppurated liver end happily, altho' the matter found a passage into the guts. Nature makes strong efforts, but the work is too tedious and severe. Why, then, when any tumour appears outwardly, should we
not

not make a puncture with the trocar? The matter may, 'tis true, fall into the abdomen; but without it the case is very desperate; and there is reason to think that in this case the tumour had opened into the cavity. Leaving the trocar in the wound may be a means of preventing this accident. This I have been told since is a very common operation amongst our surgeons in the East Indies, where inflammations and suppurations of the liver are epidemic.

S E C T. VIII.

Of a stone in the ureter.

JUNE 23d, my lord ———, aged 60, who had been for some months of a plethoric habit, was awakened about three in the morning with a general uneasiness, which in a few minutes settled into a pain of both kidneys, and inclination to vomit.

The

The urine came away very black, and soon deposited an earthy sediment. The pulse full, but not frequent. *Pblebot. ad 3xiv.* & *Clysm. ex terebinth.* & *Rad. alth. pro thea.* In the forenoon the pain left the left side, and fixed altogether in the right. & *Venæ sectio ad 3x.* at night. & *Ven. sect. u. a.* This evening the pain fell lower down the course of the ureter. The blood was somewhat fizy.

24th, PAIN still continues; pulse full but not frequent. The part is frequently fomented. & *Ven. sectio.* & *Clysm.* & *Decoct. tamarind. cum duplici fenn. lib. i. mann. 3ij. M.* This gave him severe gripes, nor had he any passage till two in the morning, after repeated injections and close fomenting the abdomen. He then had two stools. The pain less severe sitting up, than in a horizontal posture. Felt the pain severer if he stretched out his leg, when sitting up; proofs which convinced me that there was

was a stone in the ureter. *R L. L. gut.*
xxx. b. f.

25th, PULSE 75 and rather hard. *R Ven. sect. ad 3xij.* Was in a semicubium for twenty minutes. Had a gentle sweat over all except his legs for three hours. At night pulse calm and softer. *R L. L. b. f.*

26th, PAIN still continues. Palms of his hands more hot than usual. Continued lintseed-tea, fatus, injections and *L. L. b. f.*—27th, Very restless in the morning. Pulse at 68 and rather too firm. *R. V. f.* Blood more fizy than before. Urine in the usual quantity; and since yesterday has been high coloured, turbid, but no sediment. Pain not so acute. *R L. L. b. f.*

28th, UNEASY all night. Has a pain in the small of his back along with the former pain. Some drought, but pulse
still

still calm, though firm. Tongue white, but moist. *R Ven. sect.* Blood more fizy than the last. Pulse softer after it. Has complained of a pain above the metatarsal bone of the little toe, but there is no external swelling or redness. *R L. L. b. f.*

29th, WAS hot and restless last night. It now appears plain that the *L. L.* has heated him and increased the inflammation without doing any good. *R Clysm. ex sapon. venet. ʒss.*—30th, Had good rest. Pain pretty severe to-day. As we durst not venture upon any of the hotter diuretics, which are generally, tho' improperly given in these cases, we tried him with a mixture of *spt. minder.* and *acet. scillit.* but the first dose of it made him sick and he gave it up; nor did I ever expect any advantage from it on account of its stimulating quality. Got three soap injections, and was fomented,

JULY

JULY 2d, Complained of a great inclination to urine, which with the diminution of the pain made me think that the stone had come down. In the afternoon seized with a violent pain in the left kidney which lasted an hour; after which he passed two rugged stones as large as a pea. Much sand came away for some days. Began the use of soap and lime-water.

FROM this case we may see, that when there is a great inflammation of the ureter, and fizy blood, laudanum rather heightens the symptoms; that all stimulating diuretics are to be avoided; and that plentiful bleeding and topical emollients are alone to be trusted.

S E C T.

S E C T. IX.

Suppuration of the kidney.

—— Had been cut for the stone when a boy, and for three years past had the symptoms of stones in the kidneys, viz. frequent pains and inflammations there with vomiting. About the middle of February complained of a hoarseness, which was attended with a frequent pulse about 104 in a minute. For some months he passed urine like milk, which let fall matter to the bottom. He had frequently a looseness; his skin always dry. He was blooded and his blood was fizy. *R Ol. Olivar. syr. scillit. alth. ā p.e. R Decoct. rad. alth. liquorric. symphet.* Some days after, he complained of great pains in his breast. *R Ven. sect.* Blood still fizy. *R Emplast. episp. part. affect. applicand.* His pains were relieved by this for some days, but

but they came back at times. Fever and hoarseness never abated. In six weeks the matter in his urine began to smell, and in a week after he died.

S E C T. X.

Ulcer of the lungs with hysterical symptoms.

— Aged 22, had been feverish for three weeks with a tickling cough and a stitch in her left side. She had been thrice blooded, drank althæa-tea, and had the *empl. calid.* on her side. Her blood was always fizy. She was eight months gone with child.—October 24th, I found her pulse of a middling strength, 84 in the morning and 98 in the evening; pain in her left side; tickling cough. The paroxysm began at 2 *p. m.* and ended at 9 at night. Urine made at night let fall a good sediment. *Applicet. empl. epispast. later.* *R Flor. & fol. tussilag. pro thea.*
25th,

25th, The pain had been much worse during the operation of the blister, but now easier.—26th, Pain quite gone, and cough much better. Pulse same. Fit retarded for four hours, but as violent when it came. Always after she sleeps finds a sweat about her neck and breasts.—28th, Complains of a pain in the fore part of her thighs, and in the small of the back, stretching to the haunches. These symptoms threatened her with a miscarriage. 29th, Her pains came on this night with a strong hard pulse, and notwithstanding bleeding and repeated doses of *L. L.* she was delivered that night. During her pains the pulse was but 80, but quickened after the birth.—31st, Sweats and sleeps well. Feels the pain of her side and cough, for which she got a *sperm. cat. linctus*.

NOVEMBER 1st, Pulse rather strong and 124. Breathing a little affected. Prevented from bleeding her by a sweat.
Lochia

Lochia in small quantity, and pale. Gentle looseness. A rash appeared, of the milia-ry kind.—2d, Looseness continues. Pulse 128, and not so strong. The urine comes off involuntarily with stools or cough. Instead of the *L. L.* at night, which she got, R *Antimon. diaphoret. marg. ppt. ℥j. syr. q. s. M.*—3d, Pulse 120. Looseness increased. R *Empl. epispast. part. affect. R Confect. Japonic. ℥℔. dissolv. in aq. meliss. ℥iv. aq. cinn. s. v. ℥ij. M. Cap. cochl. ij. post unamquamque sedem.*—4th, Easier. She has frequent sighing. Frequent sweats, which were discouraged. 12th, Pulse 104 in the morning, and 112 in the evening. Looseness has continued. She has been taking rhubarb and chamomile tea, as she had a laxity in her guts, and wind in her stomach. She has frequent hysteric fits, with crying, pannicks, spasmodick contractions, and incoherent speech. Hot and feverish fits at night, with considerable coughing. She was tried with a decoction of the bark in

M

small

small doses.—18th, The bark seems to have bound her breast. Fever and cough the same. The defluxion is now purulent. Hysteric complaints abated.—24th, Left off the bark, and tried her with ass's milk; but it disagreed with her stomach. Spit up this day a spoonful of matter. The looseness recurring, she turns weaker every day. She died December 10th. She had no hysterick fits many days before she died: When she was opened, many small ulcers and tubercles were found in her lungs. There was an ulcer in the left lobe, so large, that it would have held my hand.

A NATURAL disposition to this disease, and a neglect of bleeding during gestation, brought on this disease. In married women, when it happens, it is generally after pregnancy; and no wonder, when that state is naturally subject to be plethoric: The ulcer was evidently formed before I saw her, and the purulent fever begun.

S E C T.

S E C T. XI.

Consumption.

DECEMBER 15th, called to Mrs. — who had lately miscarried, and complained of a cough and looseness, after taking some aloetic pills. Pulse small, and about 100; thin defluxion, clear urine, want of sleep and appetite, megrim pains, to which she was much subject, and from which the bark had often relieved her. Ordered afs's milk, and an opiate at night. In a few days she took a severe purging and gripes; left off the milk and got a diascord mixture. When the purging stopt, she tried again the milk, and again it brought on a looseness. She gave it up, and began to use the bark. This seeming to have the same effect, we gave her the extract of it, and of gentian. A sweating now came on. She tried the *el. vitriol.* but

her purging and gripes turned worfe. It was changed for *tinct. antiphthific. gutt. xxx. ter in die*. With this her purging abated, and she rather gained ground.

20th JANUARY, Often observed her pulse better at night than in the morning. Her purging returned, and her pulse sunk.

23d, SEIZED with a quick and laborious breathing, weak and frequent pulse, and slight delirium. Judging that this might be owing to the heart not being able to push the blood through the lungs, she got some wine and water; immediately after the lungs were eased, and the pulse decreased four beats in a minute.

FEBRUARY 5th, Violent purging. Pain in the throat. Her pulse, which has been of late at 124, became about this time 96, but much weaker. Died a few days after this.

NONE

NONE of these symptoms convince me that her lungs were ulcered. Her disease seems rather to have been a general atrophy. Her fever was often less at night than in the morning, which was particular; as likewise her pulse less frequent before death. Neither of these circumstances could have happened if her lungs had been ulcered.

S E C T. XII.

A hectic fever.

MR. —, aged 30, before I saw him, which was on the middle of January, had been troubled with a gentle looseness for two months. His pulse was soft and frequent. No hardness was to be found in his belly: By vomits, frequent doses of *tinctur. rh. amar.* and astringents, the purging stopt, and the frequency of his pulse disappeared. About ten days after,

ter, the frequent pulse appeared again, with hot fits and sweatings: Complained sometimes of slight pains in his breast: Had a gentle cough, but no expectoration. No sleep. Ordered *elixir. vitriol.* diet and exercise: After using the *el. vitriol.* for some days, he was obliged to give it over, as the looseness threatened to return. He began to milk and *confer. ros.* and used Tussilago tea for common drink. His fever and hot fits went on consuming him, till he died, March 20th.

IN the former part of this disease, the lungs were not in the least suspected, as he had no cough nor expectoration; and the consequent retreat of the fever shows, that the disease was lodged in the fluids in general. The same disease recurring, makes a great probability, that it was owing to the same cause. No wonder that, with an acrid blood, he should have a cough, and even slight pains in his breast: at last the lungs might be slightly inflamed. But there
were

were no signs of a suppuration of the lungs; no hectic colour, no fixed pain, no purulent spitting, and no such cough as attends ulcered lungs.

S E C T. XIII.

Inflammation of the testicle.

I Know no inflammatory disease that requires so much prudence to manage, as a simple inflammation of the testicles. The inflammatory state is to be removed chiefly by evacuations; but if these are carried too far, the swelling that remains after the inflammation is gone, will be removed with more difficulty, as these vessels, which lie so much out of the circulation, will be too much debilitated by it. Histories of this disease are useful and rare.

—, aged 30, of an inflammatory habit, after sitting with a young lady whom

he was fond of, was seized, December 26th, with a violent pain in his right testicle. It was swelled, hard, and tucked up to the groin. This pain was so violent, that it gave him a continual nausea. By the application of fomentations it turned considerably softer, and the pain went off, but the swelling continued. Being so easy at present, he neglected bleeding.

27th, AT night it began to pain him again, and some vinegar and rum were applied; but this increased the pain so much, that he was obliged to have recourse to his usual poultice of vinegar, oil, and oat-meal.

28th, THE testicle was now so large, and painful, that he could move with great difficulty. He was ordered to be bled; and to have emollient fomentations and cataplasms. From some accident only four ounces of blood were taken.

29th,

29th, TESTICLE larger, and more painful. *Rep. phleb.* 31st, Worse. The spermatic cord had been hard and swelled from the beginning, but now the least cough gave him great pain. The urethra was likewise inflamed, and the urine scalded. Having reasons to think this not venereal, and being afterwards confirmed by no such symptoms appearing, I was soon convinced that this proceeded from a communication of the inflammation along the *vas deferens*. The swelling was now very great, and as he lay in bed, pressed against the urethra. In the night-time he was troubled with continual erections, and weakened with frequent emissions. This was partly owing to the inflammation of the urethra, partly owing to the pressure of the swelled testicle, and partly owing to a greater secretion of semen. That this last had its share, appears evident, from the frequent nocturnal emissions, which should not otherwise
have

have happened, considering the frequent bleeding and low diet. There had been a small degree of fever in his pulse from the beginning. *R Phlebot. R Sal. glauher. ʒj.* The blood was fizy.—January 1st, Worse. Applied a number of leeches to the tumified scrotum, which was afterwards fomented. In this way he lost ʒx. This eased the pain greatly and reduced the scrotum, though not the testicle. *R Clysm. emolliens.*—2d, All the symptoms became more violent in the night-time, which made us afraid of a mortification. This morning he was twice blooded plentifully. These eased him, and put a stop to the progress of the inflammation. Fomentations and laxatives being continued, the swelling fell for three or four days. After that, it stopt for four days.

THEN he began to rub on the mercurial ointment on the testicle, so as to loosen
the

the teeth, and purge it off. This method was continued four weeks, with success, the testicle falling after the physic, but not in the intervals. It was now reduced to the size of a hen's egg, but continued at this size for eight days, notwithstanding the mercury and physick. No epididymis was yet to be felt. He found, that raising his thighs very high, contributed much to soften the testicle, and gave it an opportunity to contract. The testicle appeared harder in bed in the morning than at any other time, and turned softer by walking gently. This made me conclude, that nothing was now wanted but that the vessels should contract themselves, which they could not easily do, as the part was glandular, far removed from the force of circulation, and had been much relaxed by the necessary evacuations, fomentations, and cataplasms. I applied *empl. de cicut. cum amm.* to keep it warm, and allowed him a fuller diet, free air, and gentle exercise.

ercise. March 10th, Epididymis plainly to be felt.—28th, Almost quite reduced.

FROM this case we may observe, that repeated bleedings at the beginning are the principal part of the cure; and that these cannot be neglected without prolonging the disease.

THAT the common practice of bringing it down with repeated physic, if continued beyond a certain point, *viz.* impairing the strength, will do hurt, as it will diminish the contractile power of the fibres. In this case it was pushed far enough, and a contrary method succeeded it with success.

THAT the situation of the body is a material circumstance to favour its contraction; for when the testicle is higher than the emulgers, from which the spermatic artery and vein arise, its vessels are more emptied,

emptied, and the testicle appears soft. It was always hard in the morning, because the relaxed vessels of the testicle were filled with liquor, which they were not able to expel. Lying on the affected side was found to be the fittest posture, as the testicle was supported by the thigh, and was superior to the origin of the spermatic vein and artery, which would have happened otherwise on the other side.

THAT gentle exercise was good at the latter end. The best motion is that in which the testicle hangs least. It was always pained when he stood on his feet without motion; but turned softer and smaller on gentle motion. Cold weather always made it swell.

THE belly should never be much filled, as that compresses the spermatic vein. A cough ought to be shunned, as that drives the blood into the testicle, and stops the vein.

S E C T. XIV.

Fall on the head.

MR. —, aged 18, fell from a horse when running at full speed. He was immediately bled. When I saw him at night he was totally insensible, and had a stupor upon him: his pulse was firm, and a little frequent. No contusion, depression, or fracture could be discovered in his head, on which he had fallen. He was bled again, and was ordered a smart injection. Next day he continued the same, only his pulse turned more irregular and frequent. Twitchings came upon him, which rose to gentle convulsions of his extremities and upper lip. He frequently lifted up his hand to his head; and, as there was a discutient cataplasm applied to it of oat-meal and vinegar, he seemed vastly uneasy with it, and pulled it off, which

made us give it up. We continued every day taking some blood from him, and keeping his belly open with *decoct. tamar.* and injections; without these he had no passage. We applied leeches to his temples, but nothing seemed to alter his state.

8th, DOSING. Full pulse, and rather more regular, but quite insensible. A seton was put in his neck, which made him cry out. This roused him so that he opened his eyes, took some food in his own hand, and seemed to give some marks of sense. We now gave him more stimulant physic, *viz. res. jallap*, as the former seemed scarcely to affect him; but this made him uneasy with gripes, and did not come away without an injection. 11th, Rather more sensible. Twitchings almost gone. A natural passage. Leeches frequently applied to his temples, as we could not take more blood. 14th, Recovered his speech and sight. Diet still very low. 18th, Yester-

Yesterday, after having three loose stools with physic, began to talk incoherently, which being judged to proceed from inanition, he was put to bed, fell into a sleep, and awakened refreshed. His pulse flat and languid. Got *sp. lavend.* and *castor* boluses. Still on low diet.

24th, BELLY regular. Pulse rather slow. Sleeps sound. Has been up for some days, but great giddiness in his head. Sleeps well at night, but wavers in the day-time. Looks simple. Great appetite.

THE necessity of the evacuations to save his life, and recover the organs of sense being now over, and their design accomplished, the fever and stupor being gone, and his slight delirium appearing to proceed from emptiness and weakness, it now appeared necessary to change the method of cure. We therefore ordered his diet, which was of the antiphlogistic kind, to be

be changed for a more substantial and cordial one, *viz.* chicken and a little claret, &c. to be given cautiously at first; ass's milk with *conf. ros.*, the bark, and cold water to be poured on his head. We ordered that his belly should be kept regular, and that he should have the fresh air. Immediately upon this change he got strength, the giddiness diminished, the wavering went off, and he returned to the full use of his reason in a few weeks.

THIS young Gentleman seems to have owed his life to the early and constant use of evacuations, as they gave the vessels of the brain, which were inflamed, and perhaps lacerated, an opportunity of contracting and restoring themselves, and absorbing the extravasated liquors. But these necessary evacuations had weakened the faculties of his mind. We had recourse to a restorative diet, and strengthening medicines, and they were successful.

S E C T. XV.

Case of a fracture communicated by —.

ON the 24th of May, at one before noon, Mr. — was thrown from his horse upon the left side of his head, which struck against a small stone. The symptoms that immediately followed the fall were an entire loss of reason, and a stupor; a great bleeding at the left ear, computed at about two pound; almost constant vomiting of blood at the mouth; a small irregular intermitting pulse; and his eyes had the glazed appearance of one just dying.

ABOUT four hours after the accident, two surgeons saw him, who let him blood at the arm to a considerable quantity, as his pulse had then got up. Notwithstanding his apparent insensibility, he resisted

vio-

violently against this operation, and expressed a more than ordinary sensibility of pain, upon being in the least hurt, which indeed continued during the rest of the time he lived. When they examined his head, they could find no external wound, but a very considerable swelling of the teguments upon the left parietal bone, and especially upon the temporal bone of that same side, above the mastoid process.

To discover if there was any fracture, they immediately scalped that part nearest the principal swelling, with a view to perform the trepan, if found necessary. But upon laying a considerable part of the bone bare, they could not find any fracture, fissure, or depression; so they delayed the operation till further advice. Others coming about three hours after, they all agreed, though no fracture could be found, that the trepan should be applied, to give vent to the extravasated blood, which might

oppress the brain. The operation accordingly was immediately performed; upon getting through the skull, there issued out a small quantity of bloody water from betwixt the *cranium* and the *dura mater*; which last being opened, there came out rather more of the same sort of bloody lymph. No effects followed upon this, except that the vomiting of blood ceased, and his pulse became rather more regular than before; he continued all night quite restless, and seemingly much oppressed.

I saw him next morning about nine. I did not think there was any alteration upon him, no new symptoms, no convulsions, no palsy upon any part, his countenance very little changed, no inflammation or swelling upon his eyes, which he kept generally shut, his pulse was very variable, scarce two minutes after one way; sometimes pretty regular, then quite irregular; sometimes slow and strong, then again

again frequent and small. I did not see him again till Sunday forenoon, which was the fourth day, when his head was dressed; the wound looked ill, and the aperture of the *dura mater* was closed up, and distended with a liquid. Being opened with a lancet, there gushed out about three or four tea-spoonfuls of a thin serum, which continued to ouze out for some time.

ON the fifth day, much the same appearances, only he got several very calm sound sleeps, took drink very easily, turned himself in the bed, and made use of the urinal. The sixth, seventh, and eighth days he continued still much after the same manner, frequently resting pretty quietly, sleeping much, both thro' the day and night, without any addition of new symptoms, except that he seemed rather more insensible; would not take drink, and became every day weaker. On the ninth

day his fever increased, and he died that afternoon about four o'clock. There happened in this case a very extraordinary circumstance, which was at first believed impossible. Immediately after his fall, one of the surgeons put some lint into his ear; upon removing this some hours afterwards, we found a considerable quantity of the substance of the brain upon it mixed with clotted blood.

UPON opening his head, the left parietal bone was found fractured in many places, from the sagittal suture down to the lambdoid, and through the occipital bone to the *foramen magnum* of that bone on both sides. The temporal bone was likewise fractured in the mastoid process and *os petrosum*; so that there was a communication made from the brain directly into the *meatus auditorius externus*, which we could see by separating the fractured pieces of the *os temporum*; we could find
but

but a very small part of the *membrana tympani*, and none of the small bones of the ear. The squamous, sagittal and lambdoid sutures were almost quite shook loose from their joinings. The vessels of the *pia mater*, on the fractured side, were quite flaccid and empty; and the substance of the brain answering to the parietal bone, for an inch deep, was in a kind of mash. The vessels on the other side were full, and turgid with blood; there was nothing remarkable about the rest of the brain, and the *cerebellum* appeared in its natural way.

It was remarked, during this case, that the sensation of pain was more acute than usual, for he showed great signs of pain when he was bled, or got an injection: We must impute this to the inflammatory state of the brain, whose fibres must have been stretched by the turgescency of the blood-vessels.

S E C T. XVI.

An inflammation of the brain.

AS this fever happened to myself, I can describe it more accurately. We are made to attend more minutely to every circumstance which concerns our own preservation.

JUNE 7th, I rose with a slight pain in my head. Being used to the cold bath, I went in that morning, and rode about ten miles that night, pretty hard, which I perceived hurt my head very much. That night I had a growing. Next day I had a severe headach, and quick pulse. On the ninth, my headach was exceedingly severe.

10th, SYMPTOMS the same. My pulse was rather soft and weak. I was blooded; and

and when I had lost eight ounces, I fainted. This never happened to me before, nor since; having easily born repeated bleedings. That night my temples were shaved, and blisters, as big as the palm of my hand, laid to them.

11th, NEXT morning the pain gave me no great trouble, but a giddiness remained. My eye-balls, on being pressed, were painful, and my eyes could not bear the least ray of light. There was no external inflammation on them. The least noise which could scarcely have been heard at another time, gave me intolerable pain. My pulse was never above 100, and always soft and weak. I had all along a great debility, and frequent sighing. My tongue was always white and moist, and no great drought. I never got passage but with an injection. The symptom which gave me the greatest uneasiness was, a continual watchfulness; so that, for the first eight days, I never had the least appearance

ance of a sleep; and for the six following days, I dozed perhaps for three or four hours in the night very confusedly. This night my whole head was blistered; this relieved my head considerably, especially as it run plentifully for eight or nine days.

12th, THE same. This fever had the appearance of a nervous fever in all its symptoms; therefore was ordered *emuls. campb. coch. 1. tertia quaque hora*. I threw up a part of the first dose, but what remained sweated me four hours. During that time I was vastly uneasy, and almost delirious, and therefore would take no more.

13th, MUCH the same. Head quite distinct. As I had got no sleep for many nights, *R Pulv. cast. gr. xv. mucilag. g. tragacanth. q. s. ut f. bol. Cap. b. s. R S. absynth. ʒij. succ. limon. ʒj. aq. fontan. ʒiij. sacch. alb. ʒj. M.* Poultices were applied to my feet.

feet. I sweated two or three hours, but was very uneasy, and slept none.

14th, I GOT up this morning to change my bed on account of noise, and without having the least nausea, or sign of a foul stomach, I threw up a good deal of bile, and afterwards assisted it by drinking warm water. I took a vomit of *tinct. ipecac.* which came off immediately, without producing any previous sickness. It gave me one loose stool, which relieved my head considerably. *R Bol. ex castor. addend. sal. absynth. gr. v.* My head was very uneasy this night; and I was convinced that the *castor.* hurt me, without giving me sleep. I felt an unusual coldness that night. The uneasy feelings of my brain were so strong, that I was fully convinced, my disease was an inflammation of that part; and therefore I declined all heating medicines, which, I was sensible, had heightened the symptoms. On the 15th, much the same,
and

and dozed a little that night, as likewise two or three hours on the 16th. My pulse came to 94. — 17th, Pulse very soft, weak, and at 90. During the few hours that I slept that night, my head was carried, and I had a slight delirium, which was owing, probably, to the little sleep which I had got of late. In the morning I was again distinct enough. My fever abated by degrees, without any visible crisis, and left me exceedingly weak about the 20th. About three days afterwards, there was a white milky substance fell to the bottom of my urine twice or thrice; but I did not then look on it as the crisis of my fever; for it came out once with the first of my urine, and fell directly to the bottom: I rather considered it as the nutritious part of my juices, which had run off from a mere laxity of the secretory vessels, especially as I had this very symptom some years before, when reduced by a hectic fever. I have sometimes thought, since that
time,

time, that this secretion might have been purulent: if it was, it had no smell. The following symptoms give this opinion a degree of probability.

ABOUT this time I took a strangury, without any visible cause, neither injections nor lintseed-tea having any effect; and the quantity of water turning very uneasy, after being stop twenty-four hours, I drew it off with a catheter. The only reason that I could assign for this, at the time, was, that I had forgot to make water till my bladder was full, and unable to contract itself.

FOR three weeks after the fever was gone, I felt a pain in my head when I turned it; my eyes were sore to the touch, and objects danced before them. My ears were sensible to the least noise; my head was giddy, had an uneasy pulsation in it when I laid it on the pillow, and I felt an unusual heaviness in it, when I was on the
point

point of falling asleep, and after I had just awakened. For two or three days after the fever went off, I had an unusual acuteness of smell and taste, so that I felt a strong flavour from bread.

FROM considering the whole train of symptoms in this disease, it appears plainly to have been an inflammation of the brain, I mean of its cortical part; for the medullary has no blood-vessels ending in it, and seems to consist alone of nervous filaments. That this was an inflammatory disease, appeared more certainly afterwards; for I was one night taken ill in the same manner, but more violently: I was immediately bled twice, and the symptoms soon disappeared. We may, I think, determine, that though the *pia mater* was probably affected from its connections with the brain, yet that the *dura mater* was not, otherwise the pulse would have been hard, which is a necessary circumstance attending

ing the inflammation of this, and all other membranous parts. It is no wonder, that the extremities of the external vessels kept open so long after the blister, considering that the circulation through the internal was stopt, in some degree.

THIS fever had, however, a strong similitude to the low nervous fever in the weak pulse, confusion of the head, frequent sighing, depressed spirits, and sinking under the evacuation. Nothing but my own strong feelings, at the time, and the increase of the symptoms afterwards, by the nervous medicines, could have persuaded me of its being different. The weakness of the pulse was probably owing to a stoppage of the secretion of the nervous fluid in the cortical part of the brain, from an obstruction of the glands which serve for that purpose, by the turgid blood-vessels. From this case, there appears a great probability, that all
low

low fevers arise from, or are attended with, an obstruction of the brain.

BUT how happened it, when the powers of motion and sensation are allowed by all to depend on the brain, nerves, and nervous fluid, that the former were so weak, and the latter so strong? Were the nerves of the eyes, ears, palate, and nose inflamed, stretched, and rendered more sensible? I think we cannot adopt that solution, as no signs of inflammation appeared in these parts. Were the nerves of these parts less compressed at their origin in the brain? Of that we have no proof. Are the powers of motion and sensation situated in different parts of the brain? I think we have facts sufficient to warrant that conclusion. Motion seems to arise, and be in proportion to the secretion in the cortical or glandular part of the brain; whereas sensation seems, by experiment, to have its seat in the *corpus callosum*, and must be

be in proportion to the tension, and other circumstances of that part, as well as the quantity of secreted fluid. Hence that part must feel more acutely, if its tension is increased in a greater *ratio* than the nervous fluid is diminished. In the preceding case, we find the sensation of feeling more acute, while the effects of the motive powers were often more weak. The want of sleep was owing to the flux of blood to the head, a constant effect of that cause. Nothing was capable of producing sleep in that situation, but what could have inverted that motion, and have turned it to the feet. An artificial inflammation excited there, might, in part, have answered this end.

WHEN such complaints first appear, bleeding is the proper remedy. After the disease is fixt, it seems rather to do harm. Frequent dry cupping on the shoulders or thighs, cannot fail to be beneficial. This application has very strong effects, and is

too much neglected by modern physicians.

THE heating nervous medicines were found hurtful in this case.

S E C T. XVII.

Low fever.

Hist. 1. **M**R. —, of a lax and full habit, and indolent disposition complained, May 4th, of pains in his shoulders and neck, sickness, and headach. Pulse frequent, and soft. *R Vomit.* — 5th, A little stich a-cross the breast. Pulse 106. *Phlebot. ad 3x.* Blood very fizy. *R Sp. minder. 3vj. sal. C. C. gr. v. syr. sacch. 3℔. M. cap. h. f.* — 6th, had sweated plentifully; but pulse 112, and soft. Urine in small quantity, but always a sediment. A great deal of tough viscid mucus separated from his nose, throte, and lungs. 7th, The same. *R Syr. balsam. aq. cinam. f. v. ā 3ij. acet.*

acet. scillit. 3j. M. cap. coch. ij. pro dof. This vomited and purged him twice. At bed-time, & *Hauft. sudorific. u. a.*

8th, AFTER the sweating, his urine became, for some hours, pale, and then muddy, but seldom let fall a sediment as before. The mucus secreted from his *trachea* dried up. Had sweated four hours. Pulse 120, and easily compressible. No other bad symptom, or even complaint. Was ordered, in my absence, a bleeding, and the sweating draught. He sweated about two hours, but was nothing relieved by it.—9th, Had a very restless night. Pulse rather weak, and at 124. A deafness. Urine turbid, but no sediment. At night, pulse 130. I now foresaw and foretold the unhappy issue of this case. & *Empl. episp. terg.*

10th, Pulse 140. As the blister produced a strangury, I rubbed his ankles with *ol. camphor.* and it abated. He had

not a single complaint. His hands and arms felt very cold, though his feet did not. After a little sleep, his pulse at 134. Head quite distinct. His breathing, which had been laborious, became easier. At night cold sweats broke out, and his pulse was 146, and weak. He was blistered again, and got a bottle of claret that night, but his pulse continued to sink. — 11th, The same. R *Cast. gr. xv. camph. gr. v. syr. q. s. ut f. Bolus.* This having no effect, we added to it, *ol. C. C. gut. viij.* and applied cataplasms. — 12th, His head was affected this day. Pulse very low. He got near an ounce of the *tinct. serpent.* which had no effect on his pulse. Died this afternoon.

THERE was no symptom in this fever, at the beginning, that indicated so sudden and so dismal a catastrophe. I was not a little dubious, whether he should have been bled at the beginning, as his pulse was of a middling strength; but as his pulse

pulse continued sufficiently strong after it, and as his blood proved so fizy, I think the loss of it was of no disadvantage to him. But the second bleeding, I was clear, must hurt him, as his pulse was then soft, and easily compressible. And indeed it proved too true; for his pulse, after that, had never any firmness in it, and began to sink from that night.

I saw plainly, after the first sudorific, that the pulse quickened by it, and therefore was inclined to give it over, and apply solely to the support of the pulse, and thinning the viscid secretions by repeated blisters. He got another, and was again the worse for it, as his pulse still quickened more, the secretion from the *trachea* dried up, his urine turned pale, and seldom afterwards had a sediment. He got it again, and it still had bad effects; viz. accelerating the pulse, and producing a restless night. Thus, the thinner, and perhaps the more spiritous parts of the blood being

expelled, the pulse gradually sunk, and it was, of a sudden, out of the power of the most stimulant medicines to rouse it.

THIS was a very complicated fever, and required the greatest prudence to direct it. The blood was highly inflammatory; but the powers of motion rather weak. The former required to be brought down, the latter to be strengthened. But, by assisting one, we were not to hurt the other. The pulse should have been sooner supported.

IT may be properly said, that he died without a complaint. It is strange, that with such blood, and such a pulse, he should have so few. In this fever, as in all others, the pulse was my chief director. In drawing a prognostic from it, I have seldom been deceived.

Hist. 2. OCTOBER 24th, Was sent for to the country, to Mr. —, whose constitution

stitution was delicate and nervous. On the 20th, had felt something unusual about himself. On the day following he had a grewing fit. On the 23d, had been blooded to 12 ounces, and had got a puke of warm water, as vomits used to bring away some blood. His blood had been fizy. His pulse is a little hard, but not very strong, and about 100. Tongue white, and no great drought. Urine sometimes with a lateritious sediment, but generally turbid. He is a little deaf, and sighs frequently. It was thought proper to blood him again to 3x. This blood not fizy.

23d, Pulse of a middling strength, but still a tendency to hardness; much the same as to quickness. Nausea. In the evening took a severe vomiting of bile and phlegm. An injection was given; a looseness followed, which gave him six stools. — 26th, I did not see him. I was told that he had been pretty easy all day, and at night had

got an injection; that in the night-time he had been very restless.

27th, I FOUND his pulse weaker, and about 100. His answers were much slower. Pain in the back-part of his head. *R Em-plast. epispast. terg.* Got wine in his bread-berry.

28th, PULSE still weak, and at 120. Much more confused. Tongue still white and moist. This morning he fell into a profuse natural sweat, though not a general one. His relations thought that it was a crisis: from a general knowledge of the bad effects of sweating in fevers, with a low pulse, and from considering the circumstances of the sweat, my views were not very favourable; and in two hours I was able to assure them that it could not be critical, as his pulse was then 130. A little time longer shewed them, that it was destroying him very fast, so it was gently checked. At night his pulse was not very distinct;

distinct; but this abated on his getting some wine. *Applicet. emplast. epispast. capit. Applicent. catapl. ex mic. pan. & lact. pedibus. R Bol. ex castor.*

29th, Had been indistinct all night, and is still. Pulse 124, and rather weaker. Sweat now altogether stopt. *Appl. empl. episp. tal.* Pulse continues to sink all this day, notwithstanding wine and *emuls. camphor.* He had gentle spasms for some hours. 30th, Pulse 118, and much weaker. Got James's powder, which threw him into an universal sweat for some hours. Died this evening.

THIS case very similar to the former. As there was a degree of hardness in his pulse, probably from the *dura mater* being affected along with the brain, he stood the bleedings very well; but his pulse turned quicker and lower after the looseness, and was totally sunk by the sweating. Hence we may observe, with what caution we should

should go about every evacuation in these fevers; that if we go but a very little too far, it is impossible ever to make up for it again; and that, in general, it is much safer to risque an inflammatory state, which is more easily remedied, than the contrary.

I attended at the same time the two following.

Hist. 3. OCT. 19th, —, aged 20, had been in a fever for eight days, with a dullness of hearing, pain, and confusion of his head. Better generally in the morning, and worse in the evening. He had lost some blood twice, which had a buff. Constant nausea, for which he had got a vomit. A blister had relieved the pain of the head, but it had recurred. He had got salts yesterday, and had been 14 times at stool. His pulse is low, soft, and at 94. His urine is very turbid, and lets fall a sediment like matter. Spirits much depressed, and breathing much oppressed. Severe pain

pain in the small of his back. Tongue white and moist. *R Empl. episp. terg. R Pul. rhæi 3ß statim*; and after, *R sal. succin. castor. ā gr. vij. L. L. gutt. xx. M. cap. 12^{ma}. quaque hora.* — 20th, Looseness better. Head easier. Pulse same. *R Empl. episp. N° ij. R Bol. u. a.* — 22d, Gentle moisture. Pulse fuller, and 104. Head much easier, and breathing freer. Looseness gone. *R Bol. sine L. L.* — 24th, Yesterday had purged five times, and his pulse had been more frequent. Pulse lower, and at 100. — 26th, Looseness, for which he got a diascord mixture. Pulse 104. — 29th, Pulse 94, and stronger. Still some catching in his breathing. November 3d, Pulse natural. No sensible crisis.

It appears plainly from this case, that both the artificial and natural purging increased all the symptoms of the disease, and that when these abated, it turned easier.

Hist. 4. Miss ———, aged 20, had been eight days in the fever; her head had been
con-

confused, and blistered without success. No sickness. Dry skin. Pulse frequent, soft, and low. Depression of spirits. Laborious breathing, with pains in her breast. *R Emplast. episp. terg. R Bol. ex cast. & f. succin. 12^{ma} quaque hora.* October 20th, Pulse same. Very deaf. Constant moisture of her skin. Great confusion of her head. *R Empl. epispast. pone aures. R Bol. sexta hora.* — 22d, Head quite eased after the blisters. Still very deaf. Pulse so low that it can scarce be felt, and 128. Wine very often, and wine-whey for common drink. *R Empl. episp. N^o ij. tal. R Bol. addend. pulv. croc. gr. iv. R Tinct. croc. & cast. ā. p. c. cap. coch. parv. sæpe.* — 24th, Last night her pulse began to rise; still low, and 120. Head clear. Oppression in breathing. Has drank an English pint of Lisbon, besides whey, each day. *Applicent. catapl. pedib.* — 26th, Yesterday her pulse had sunk again. Had been blistered. Drinks a bottle of pure wine in the day. Pulse fuller to day, and at 106. — 28th, Pulse

78. Sediment in the urine. She sneezed very frequently for two or three days, which seemed a part of the crisis.

THE great advantage of wine appears from this case; for the pulse turned fuller and slower immediately upon getting it: and when its good effects were like to have failed, from the quantity being too small, they became again visible on an increase of the quantity.

I DON'T remember to have ever seen a crisis of these fevers by sneezing, as was in this: it shews a saline acrimony in this case.

Hist. 5. A YOUNG lady, of a delicate constitution, was seized with a confusion in her head, a great pain in the back-part of the head and neck, loathing, and want of rest. Her pulse rather weak, and not very quick. She was blooded, and got a vomit. She got a mixture of the *sp. minderer*. which produced a sweat, but the quick-

quickness of her pulse increased. I saw her, October 21st, which was the 8th day of the fever. She had been taking, for twenty-four hours, a mixture with the *vin. benedict.* She had been sweating very plentifully for that time; her breathing was quick and oppressed, and when the sweating abated, it turned yet worse, which induced them to keep her in that state. She slept none. Her pulse beat 150, and was easily compressible. She had a little cough. There was a necessity to alter the method of treatment, as the fever had rather gained ground during the sweating, and the pulse turned weaker. The sweating was therefore gently stopt; and she had a blister to her back, to ease her lungs; and the squill mixture; but this was immediately given up, as it purged her. — 22d, The sweating has stopt since last night. Breathing much easier. Complains of great confusion in her head. Frequent sighing, and great dejection of spirits.

Pulse as frequent, but rather a little stronger. Allowed wine frequently, which she was very fond of. *R Empl. episp. brach. intern.* — 23d, Much the same. *R Empl. episp.* — 24th, The pulse rather better, and all the symptoms abated. In this way she continued, with her pulse about 120, and very weak till the 29th, when all the symptoms increased. Two more blisters applied. 30th, Much better. After this the fever went off gradually.

THE blisters, in this case, appeared to operate with singular advantage, as the breathing, instead of turning worse, upon checking the sweat which had happened, was greatly relieved by them. The good effects of the wine were very visible too.

THE following cases were communicated to me by a friend, and concur strongly with the former, in showing the bad effects of evacuations in low fevers. The first

first of these happened soon after the first of my cases in the same place, and appears to have been the same species of low fevers.

Hist. 6. —, aged 30, had lived mostly on vegetables for two years, shunning meat and wine. He was seized, August 2d, with a very great lassitude and restlessness. On the 4th, in the morning, he sweated gently for ten hours, having taken some sack-whey the night before. At night his pulse was soft, and rather weak. The lassitude and pains, especially of his eyes, still continuing — 5th, A gentle moisture. Urine turbid, with a sediment. A tendency to a stupor. He got, during the day, *julap. diaphor. phar. paup.* and at night an injection, which relieved him a little; and *haust. diaphor. pharm. paup. h. f.* — 6th, Restless all night; urine higher coloured, and without a sediment; tongue moist and white; disagreeable taste in his mouth. He got a vomit, with which he threw up much

much viscid matter, and had two stools. *R haust. b. f.* — 7th, A more restless night. Began to sweat at four, *a. m.* Got a mixture, with a great proportion of the *sp. minder.* in it. Sweated all day. Pulse 88.

R Bol. e. pulv. contrayer. ʒj. camph. gr. iij.

— 8th, Restless night. Slight delirium; sweat still continues; eyes muddy. Pulse

98, and weak. *R Bol. ii a. Appl. c. catapl. e. mic. pan. & lacte cum pauxillo pul. sinap.*

Slept most part of this day, and had a gentle moisture. At night pulse 90. Urine

paler. Delirious. *R Bol. u. a. R Sinapism.* — 9th, Restless, and no sleep. Wine

allowed. Pulse slower, and delirium the same. A light cloud in the urine. At

night all the symptoms worse. Pulse above 100. Delirium increased. *Applicet. empl.*

epispast. capit. R Bol. ii. a. Pulse weaker.

Delirium increased, and very restless. —

10th, Slept much this day. Pulse weaker

and quicker. *R Julap. camph. R Pulv.*

valerian. sylvest. ʒj. Died in the night-

time.

HERE the bad success of the sweating method appears as strongly as in *Hist.* 1. as the symptoms turned worse and worse with it:

Hist. 7. ———, aged 50, and strong, on July 9th, had, while sweating, exposed himself to the night-air, and next day complained of lassitude, and great weakness. He took a vomit and salts. — 14th, Has sweated gently at several times, but not eased by these sweats. Pain in his head and back. Great weakness, heat, and excessive thirst. Breathing laborious. *Pblebot. ad 3x.* Blood fizy. Pulse quicker at night. *R Emplast. episp. capit.* *R Clysm.* *R Mixt. e. sp. minder.* — 15th, Slept none. Purged several times with the injection. Rather a little better. Threw up some bile. At night pulse quicker; great heat and lassitude; head clearer. *Julap. salin.* 16th, Pulse the same. A delirium. Drinks less. *R Empl. episp. N° ij.* *R Bol. e. cast. cum sal. succin.* 17th, Delirium continues, but distinct

distinct at times; passes his urine insensibly. — *R Bol. u. a. R Mixtur. cordial.* 18th, Sweated much this night. Sleeps constantly. Pulse much weaker. *Applicet. empl. calid. plant. ped.* *R Bol. u. a.* — 19th, Pulse quicker. Tongue moist. Stupor. Sweats plentifully. Several stools with an injection. Quite insensible. *Subsultus tendinum.* *R Bol. u. a.* This night his breathing became very laborious, and he died the following day at noon.

IN this case the breathing was very much relieved by the first blister, and continued easier till the night before he died.

Hist. 8th, —, aged 19, had been feverish for six days, was blooded, which had relieved him. — January 20th, Complained of a general uneasiness and headach. Pulse quick and low. *R Clysm.* — 21st, Pulse quicker and lower. Has had a natural sweat. *R Julap. Diaphor.* Nausea,
P 2 Eyes

Eyes dull: tongue white. No pain. R
Tinct. ipecacuan. 3x. which only operated
 by stool. — 22d, Much the same. Pulse
 120. Soft and low. Constant spitting of
 viscid saliva. Dulness of hearing. *Appli-*
cet. emplast. epispast. nuchæ. R *Cordial. julap.*
 At night, pulse 128. Urine of a natural
 colour. R *Campb. nitr. pulv. ā. gr. iv. cap.*
statim. — 23d, Constant spitting and
 loathing, which keeps him awake. Pulse
 126, and still lower. Eyes very dull. R
Pul. ipecacuan. tart. emet. ā. gr. iv. pro vo-
mit. This, with the assistance of vitriol,
 operated well, and brought away a good
 deal of viscid matter. During the opera-
 tion, his nose bled above a gill, which he
 said, relieved his head of a heaviness. At
 night, symptoms worse. Pulse quicker and
 lower. R *Tinct. rhæi. 3j. Applicent. sangui-*
sugæ tempor. which relieved his head. Al-
 lowed *vin. rbenan.* Purged twice with the
 rhubarb. — 24th, Pulse lower, and 130.
 Very uneasy. Tongue dry. *Applicet empl.*
epispast. capit. This afternoon he had, for
 some

some hours, a stupor, which went off again. — 25th, Pulse excessively quick and low. Tongue dry and black. *R* *Julap.* *Mofchat.* At night, pulse more sunk. Has had a moisture on his skin. Very restless. *Subsultus tendinum.* Died on the 26th.

It appears from this case, that all the different evacuations of artificial and natural bleeding, vomiting and purging increased the quickness and lowness of the pulse. In this patient, as in many of the former, the mucous secretion seems to be considerably increased.

FROM the resemblance betwixt these low fevers, and that which proceeded from an inflammation of the brain, we may safely conclude, that all low fevers are attended with an obstruction of the glandular part of the brain, and that the weak pulse is owing to that obstruction.

Is this obstruction owing to the increased quantity of mucus in the blood? I think it highly probable, from its being secreted in such quantity, from the slow progress of the obstruction, from the constitutions which this fever attacks, and the method found most serviceable in curing it.

THE first epidemic, which was a low fever, shows us that a suppuration sometimes happens in such a situation. I think it now probable, that the white sediment, in my own case, and in one of the preceding low fevers, arose from some slight suppuration of the brain, and that nature was carrying off the matter by urine.

It appears that all evacuations when the pulse is low and soft, as is generally the case in these fevers, are pernicious, and not afterwards to be remedied. Even an injection, operating four or five times, appears

pears detrimental. I have often seen the fatal effects of profuse sweatings, which are so much, and so injudiciously used in all, and especially in these fevers, where there is no room for any other evacuation. They carry off the subtiler fluids that should nourish and support the patient's strength. They produce a deceitful change for the better, by making the breathing less laborious; but, whenever the sweating ceases, it becomes worse than before: besides, blisters remedy that symptom more effectually. It requires a very acute judgment to know, whether sudorific medicines will do service or not in these, or any other fevers; where they do carry off the fever, as often happens, nature, allowed a little longer time, would as certainly have done the business herself; when they do not abate the fever, they weaken the patient so, that he has not strength to support till nature brings on a crisis.

THE great aim of the physician should be to support the pulse in a middling state till that happens. Wine is the principal remedy, and very grateful to the patient. In such cases it loses its intoxicating quality. A remarkable instance of this I had from the gentleman himself, and from the surgeon who attended him. An officer in lord Home's regiment, young, and very temperate, was seized at Dublin with the chrySTALLINE small-pox, attended with a sunk pulse. He was allowed wine; he agreed with it; he used it freely; he arose, by degrees, to drink in a day, eight bottles of Irish claret, two bottles of strong ale, besides a great quantity of cordial electuary and julep; he gradually diminished the quantity upon the decline of the disease, and when I saw him, was going abroad, and drinking two bottles in the day. It never had the least tendency to affect his head.

PART III.

EXPERIMENTS.

SECT. I.

Experiments on the velocity of the blood, and heat of the body, in morbid cases.

AS in fevers, the velocity of the blood's motion, and the heat of the body are both increased, it appeared to me an object worthy inquiry, whether or not these two kept any proportion to one another? That was to be done by experiment alone. I shall, therefore, relate what experiments I made with this view. Those with the thermometer, which was according to Fahrenheit's scale, were performed with great accuracy; for it was always kept in the arm-pit, betwixt 15 and 20 minutes. It was necessary
to

to carry along the heat of the air. I chose to make my experiments in those diseases, where there was the greatest and most sudden change in the pulse, viz. remittents and intermittents.

EXPERIMENT I.

JAMES —, young and strong, had been for some days in a remittent fever,

	Velocity of the pulse in a minute.	Heat of the body.	Heat of my room.
	100	100	74
Next day, when he finds himself easier,			
	103	99	72
Day after	104	101	68

HERE it appears, that the pulse increased three beats while the heat decreased one degree. The patient finds himself better on the decrease of heat, though the pulse is quickened.

EXPE-

EXPERIMENT II.

BIRCH, in a fit of the remittent fever,

Velocity of the pulse in a minute.	Heat of the body.	Heat of my room.
---------------------------------------	----------------------	---------------------

110	104	74
-----	-----	----

Next day in the remission, after having sweated much, feels himself cold,

97	102	72
----	-----	----

HERE the diminution of seventeen beats was scarcely attended with the diminution of two degrees, as the atmosphere had lost two degrees of heat. He felt cold when he was really warmer than when in health.

EXPERIMENT III.

BRANSON has a hectic pulse after a remittent, - - 129 98 64

Has no complaint

110	99	65
-----	----	----

HERE

HERE the pulse decreased nineteen beats, and the heat increased one degree.

EXPERIMENT IV.

Ross, in a hot fit of an ague; the heat appears very great to me,

	Velocity of the pulse in a minute.	Heat of the body.	Heat of my room.
	100	104	62
Better, - -	84	104	62
Quite easy, - -	85	99	62

HERE the heat appeared to me stronger than it really was. He felt himself better upon a diminution of the velocity of his pulse without any diminution of heat.

EXPERIMENT V

NASH, in the cold fit of an ague,

	110	104	60
After he had sweated much,	130	101	60

HERE

HERE is a considerable increase of heat during the cold fit; and a diminution of heat, with a great increase of the velocity of the pulse during the sweating.

EXPERIMENT VI.

HALIDAY, shaking greatly in the cold fit of an ague

	Velocity of the pulse in a minute.	Heat of the body.	Heat of my room.
	112	104	60
In the hot fit -	104	104 $\frac{1}{2}$	60
In the sweat, -	112	101	60
Next morning feels himself well,	104	100	62
Blooded directly to fourteen ounces. An			
hour after, -	80	99	

HERE again is an increase of heat during the cold fit, and a deception from the patient's feelings. How soon the bleeding diminished the velocity of circulation and heat, though in no manner of proportion.

EXPE-

EXPERIMENT VII.

WILSON, cold fit just going off,

Velocity of the pulse in a minute.	Heat of the body.	Heat of my room.
---------------------------------------	----------------------	---------------------

90

104

66

In the intermission,

74

97

61

EXPERIMENT VIII.

BARNET, in the hot fit. I could not endure his heat without uneasiness,

90

107

61

In the intermission, 88

101

HERE is a degree of heat, which Boerhaave did not think the human body capable of, without having its fluids coagulated. No proportion betwixt the diminution of velocity and heat.

EXPE-

EXPERIMENT IX.

CROOKSHANKS, in the cold fit of an
ague,

	Velocity of the pulse in a min.	Heat of the body.	Heat of my room.
93 weak & small	101	61	
In the hot fit, 100 a little stronger	107	61	
In the intermission,	64	99	56

EXPERIMENT X.

ROAN, In the cold fit of a remittent,

100 low & soft,	100	56	
Next day in the hot fit of a remittent,			
120 stronger but soft,	106	56	
Same day, 8 hours after, two blisters to his arms, 105 low & soft,	103	56	
After using the bark for a day,			
78 stronger and soft	95	56	
Four days after, when he had missed a fit,			
78 stronger and harder,	92	46	

HERE the blisters made the pulse softer and lower, and diminished the heat. The bark seems to have made the pulse firmer and stronger.

EXPERIMENT XI.

CAMERON has a hectic pulse and sweatings after a remittent fever.

Velocity of the pulse in a minute.	Heat of the body.	Heat of my room.
106 strong and firm	95 $\frac{1}{2}$	56
Next day, after 6 doses of $\mathfrak{z}\mathfrak{ss}$ of the bark,		
94 less strong and softer	95	56
Next day 88, soft and of proper strength	93	52

HERE the bark, by correcting the hectic cause, diminished the tension of the vessels, and the velocity of the pulse. The heat seems to have remained nearly the same; for he lost only two degrees, while the atmosphere lost four degrees. The bark seems to have kept up the heat.

EXPE-

EXPERIMENT XII.

DEE, in the intermitting day of a tertian,

Velocity of the pulse.	Heat of the body.	Heat of my room.
93 soft and of middling strength.	96	56
In the hot fit 124 soft and lower.	106	56
Next day having taken some bark in decoction, - -	87 soft and low.	97 50
Next day, having taken lb 13 of the decoction, - -	90 soft and low.	97 46
Next morning, after having a small fit,	80 soft and stronger.	97 44

HERE the bark kept up the heat of the body, although the heat of the atmosphere was diminished 12 degrees, and at last increased the strength of the pulse.

EXPERIMENT XIII.

DRYSDALE, in the remission of a remittent, just before the use of the bark,

Q

Velocity

Velocity of
the pulse.

Heat of Heat of
the body. my room.

90 soft and of proper strength. 96 56

In the evening, after four doses of the bark,

86 a little harder. 98 56

Next morning was feverish in the night,
after 8 doses of the bark,

85 softer. 101 $\frac{1}{2}$ 56

Next morning had no fit,

77 soft. 98 52

Two days after, 80 soft. 100 45

HERE again the heat is increased by the
use of the bark, although the atmosphere
was colder.

FROM these experiments the following
corollaries arise:

Cor. 1st, THAT in morbid cases there
is no certain proportion betwixt the in-
crease and decrease of the velocity of the
pulse and of heat. From a great number
of experiments made on the same person
in health, I found out the same truth.

Hence

Hence heat does not depend on the quickness of the pulse alone.

Cor. 2d, A sick person may find himself easy, and think himself well, when he has a considerable degree of fever, and increase of heat. A gentleman died of a low fever, during the course of which, I cannot say that he had a complaint. By attending to his pulse I was able to foresee the danger, and prognosticate his death three days before it happened.

Cor. 3d, THE bark increases the natural heat, and generally makes the pulse stronger.

Cor. 4th, DURING the cold fit of an ague, the heat is considerably increased. Swenke, in his *Hæmatologia*, says, that the heat in the cold fit is less than the natural heat. But his experiments, perhaps, were made at the first approaches of the cold

Q²

fit,

fit, when the obstructions in the capillaries are considerable, and the increase of circulation inconsiderable.

S E C T. II.

Nitrum Murale.

DISQUISITIONS into the nature of bodies are entertaining and useful. But there are none in which animals, who breathe the air, are so nearly concerned, as those that seem to be deposited from the air. It is our business to know whether we take them into our bodies, or not. The *nitrum murale* is of this class; and as it has not yet, so far as I know, been examined, I shall endeavour to detect its nature and composition by experiment.

THIS salt is found mostly on the plaistered walls of bog-houses, and it was from one of these that I got what was necessary for

for the following experiments: I observed that it adhered only to those parts of the wall which consisted of rough plaister, or where the smooth plaister was broke off.

THIS salt is hot and urinous to the taste; and after it has been some time in the mouth, has some resemblance to quicklime.

THAT I might purify it from all adhering calcarious particles, and fit it for the following experiments, I dissolved it in water, filtrated and crystalized it in the heat of the sun. Instead of taking the same shape of long small crystals, which it had before, it appeared scaly and spongy, and shot up strongly along the side of the vessel into ramifications; nay, it even passed over the top of the cup. When kept long in the heat of the sun, it turned to a white mealy body, which, however, was altogether dissolvable in water. This salt does not liquify in the air.

EXPERIMENT I.

THIS salt raised a violent effervescence with vinegar, and sent up an acrid pungent smell. It effervesced strongly with *sp. vitriol.* and sent up an acrid pungent smell, something like stale urine. *Ol. tart. p. del.* made no change in it. It turned *syr. viol.* green:

HENCE its alkaline nature is manifest.

EXPERIMENT II.

THIS salt, taken from the wall, or after it was purified, did not detonate with nitre in fusion; some sparks only appeared. This shews some oleaginous particles in it.

EXPERIMENT III.

THIS salt, dissolved in water, turned brown paper into a match, which shows its
nitrous

nitrous quality. This seems to be the reason, if there was so good a reason, for calling it nitrum murale.

EXPERIMENT IV.

To try if it was volatile, I put some of it in a tin vessel, and set it over the fire; with the heat the tin vessel melted, but no salt was sublimed. Hence not volatile.

EXPERIMENT V.

To try what effect a strong heat had on it, I put 40 grains of it in a crucible, and set it in a strong fire for some hours. It was reduced to 30 grains, was more white, and more alkaline to the taste. It did not yet liquify in the air.

EXPERIMENT VI.

HAVING discovered that some part of it was volatile, and being desirous to know

Q⁴

what

what that part consisted of, I mixed half an ounce of it with an ounce of sea sand very well washed. During the first two hours the heat was gentle, and I got 2 *dr.* of a liquor, which made no change on *syr. viol.* and appeared to be water. After it had been eight hours in a very strong heat, I got half an ounce of a yellow liquor, which had the smell of *spt. C. C.*, turned *syr. violar.* green, and effervesced with all acids. Its very high colour showed that it contained oil. The residuum was hard, run together, and tasted strongly alkaline. Much of the moisture came from the glasses and sand, which were not thoroughly dry.

EXPERIMENT VII.

To see what species of salt it would make with the different acids, I saturated some of it with the vitriolic, some with the nitrous, and some with the marine acids.

After

After the saturation a red oily substance fell to the bottom of each.

THE vitriolic acid and *nitrum murale* gave crystals of a parallelogram figure, very white, bitterish, and very large. They melted with a small heat; they therefore resembled *sal. glauber*.

THE nitrous acid and *nit. mur.* gave a salt like the *nit. cubicum*. The *sp. sal. mar.* and *nit. mural.* gave a salt resembling sea-salt.

It appears, then, from these experiments, that the *nitrum murale* is the fossil alkali, mixed with a little volatile alkaline salt, or principles that with fire give that salt. Although it made a match like nitre, yet I could not discover any nitre in it. This property I have likewise found in the salt of Aix la Chapelle waters, which is the fossil alkali.

IT is easy to account for the origin of the volatile alkali, as I had collected this salt from a bog-house ; but it is not so easy with regard to the fossil alkali. How should it rise so high from the surface of the earth ? It cannot arrive there already compleatly formed, because we have found it not to be volatile. It must then be formed on the wall from different principles ; for lime contains no such salt. The vegetable alkali seems, from reason and experiments, to consist of an absorbent, but not calcarious earth, and an acid, probably the vitriolic, intimately connected by the fire. This alkaline salt seems to be compounded of the nitrous acid drawn from the air, and intimately united with the calcarious earth of the lime-walls. Its similitude to nitre inclines me to think its acid nitrous ; and its being found mostly where the walls are moist, and where there is a flux of air, shows that part of its composition is drawn from that source.

HENCE

HENCE appears the reason why so much sea-salt is found in the materials exposed to make nitre, as in these there is always much calcarious earth. This being converted into the fossil alkali, will necessarily unite itself to the marine acid deposited or made in the materials, and so constitute a real sea-salt.

S E C T. III.

Experiments on the quantity of insensible perspiration in Scotland.

THERE is no discovery, next to that of the circulation of the blood, that has so much affected our reasoning in medicine, as that of the insensible perspiration. The origin of most diseases, and the operation of most medicines are accounted for from it. Sanctorius, to whom we are indebted for the discovery, would have done more service to the science

ence of medicine, had he narrated simply the different experiments that he made, with the proper circumstances belonging to each, and allowed the reader to be a proper judge of the conclusions which he drew from them. By neglecting this, his particular conclusions meet with less credit; especially when we discover his reasoning to be often trifling and erroneous. His faults have, in a great measure, been remedied by Dr. Keil, who made experiments of this kind in England.

To make these statical experiments a proper fund for reasoning, it is not only necessary, that they be made with the utmost exactness, but that the person's total weight, and the extent of the surface of his body should be previously mentioned, and the state of his pulse at every particular weighing should be recorded. The moisture, heat, and weight of the air at the time of the experiment, should be narrated, as these seem to affect perspiration

ration in a considerable degree. With a view to attain a sufficient degree of exactness, I began some experiments on this subject. Besides the general heads under which these experiments have commonly been made, I proposed to have considered the quantity of perspiration in different diseases, and under the operation of different medicines, which is the only way that we can know those of the diaphoretic kind; but different avocations have hindered me from pursuing my plan. However, as no experiments of this kind have yet been made in Scotland, I will narrate some of the most general, which will be sufficient to fix the quantity of perspiration in this country.

THE thermometer, which I made use of, was adjusted according to Farenheit's scale; the hydrometer is an instrument of my own contrivance, moved by a catgut, and having the motion multiplied by wheels 200 times. On the first axis there
is

is an index, and the dial-plate is divided into 100 degrees. The instrument was so adjusted, that the index pointed at 100 when the cat-gut was fully wet. The drier therefore it is, the further is it removed from that number. This index, on the first axis, served to measure the revolutions of an index on the third axis. This latter index is in continual movement, owing to the great increase of motion by the wheels.

I need not observe, that part of the perspiration, mentioned in these experiments, comes from the lungs. This is computed by Sanctorius, to amount to six ounces in 24 hours; by Hales to 23; the latter computation seems too high, and part of that moisture probably owing to what is contained even in a dry air. The remaining quantity, after this is deducted from the whole, is the excess of what passes by the skin, above what is absorbed by it.

I WEIGH 145 pound, and then feel light and easy.

EXPERIMENT I.

JUNE 3d, 1751, Betwixt the hours of 3 and 5 in the afternoon, I perspired two ounces; I dined on mutton, and drank nothing but water. The mercury in the thermometer stood at 64 deg. The index of the hydrometer pointed at 36, which shows a considerable drought.

EXPERIMENT II.

JUNE 4th, Betwixt half an hour past 10, and half an hour after twelve, I perspired four ounces. I find myself light and easy, which I was not in the morning, owing to a stoppage in my perspiration; for, from half an hour after 12 at night till 2 this morning, I had only perspired half a pound, a smaller quantity than

than usual. I had taken tea for breakfast this morning. The day was clear, and therm. 64. hydrom. at 36.

EXPERIMENT III.

JUNE 5th, Betwixt 11 at night, and 9 next morning, I lost 13 ounces; I had eat to supper two eggs, a few boiled turnips, and drank water. The air was damp, for the index of the hydrometer pointed at 43, therm. at 59. I eat to breakfast this morning 1 *lib.* 3 *oz.* of tea, bread and butter. Betwixt 10 and 12 perspired 6 *oz.* Betwixt 12 and 2 afternoon, having walked in the sun all the time, I lost 12 *oz.* Dr. Hales has observed in *Exper.* 38. of his vegetable statics, that the perspiration of plants is greatest about noon.— Eat to dinner lambhead-broth and roasted mutton, with water and four glasses of wine; in all 1 pound, 14 ounces, therm. at 62. hydrom. at 43.

BE-

BETWIXT 3 and 5 perspired $6\frac{1}{4}$ oz. Betwixt 5 and a quarter after 9 lost 9 oz. Had taken in the afternoon 11 oz. of tea and bread. Betwixt a quarter after 9 and half an hour after 11 lost $4\frac{1}{4}$ oz. Evacuation *per alvum* during these last 24 hours $3\frac{1}{2}$ oz. By urine during the same time, 3 *lib.* $2\frac{1}{4}$ oz.

My perspiration, then, during these $23\frac{1}{2}$ hours, amounted to 3 *lib.* $3\frac{1}{2}$ oz. As I had not weighed my supper, I could not know the exact quantity that I had eat and drank during that time.

EXPERIMENT IV.

JUNE 6th, Having gone to bed the preceding night without supper, and gained so much during the night, as will appear in a subsequent experiment, betwixt 7 this morning, and 20 minutes after 9, I lost 2 oz. Pulse beats 76 in a minute,

R

therm.

therm. 62, hydrom. 43. I eat to breakfast of tea and bread 1 *lib.* 6 *oz.* Betwixt that and 20 minutes after 2, lost 6 drachms. Eat and drank to dinner 1 *lib.* 11 *oz.* Betwixt 3 and 5 lost 1 $\frac{1}{2}$ *oz.* Drank 6 *oz.* of tea in the afternoon. From 5 to 11 lost 6 *oz.* Wind in the north-east. Therm: and hydrom. the same. Urine, during this time, 1 *lib.* 7 *oz.* *Fæces alvinæ* 4 *oz.*

It appears that the perspiration was considerably less this day, especially in the afternoon, than the former, which was probably owing to the moisture of the air, and cold north-east wind.

EXPERIMENT V.

JUNE 11th, From 11 the night before, to 9 this morning, lost 13 *oz.* Eat to breakfast of tea and bread 1 *lib.* 3 $\frac{1}{2}$ *oz.* Betwixt 10 and 2 lost 9 *oz.* Hydr. 29, which shows the air to be very dry. Therm. 63.
Eat

Eat to dinner 1 *lib.* 4 *oz.* Betwixt 2 and 5 lost 5 *oz.* Hydr, 26, therm. same. Drunk of tea in the afternoon 6 *oz.* From 5 to half an hour after 9 lost 9 $\frac{1}{2}$. Eat to supper 1 *lib.* 5 $\frac{1}{2}$ *oz.* From half an hour after 9 to half an hour after 11 lost 2 *oz.* During that time I evacuated by urine 40 *oz.* and *per alvum* 3 $\frac{1}{2}$; which two added to 2 *lib.* 6 $\frac{1}{2}$ *oz.* of perspiration, makes my evacuations to amount to 5 *lib.* 2 *oz.* My meat and drink, during that time, amount only to *lib.* 4. 3 *oz.* This excess of the egesta above the ingesta must have arisen from having eat a plentiful supper the night before, which supper, and not that the night after, ought to have been computed. The perspiration is less by 13 *oz.* in this experiment, during 24 hours, than in experiment N^o 3.

EXPERIMENT VI.

JUNE 8th, From half an hour after 12 at night, to half an hour after 8 next

R 2

morn-

morning, lost 18 oz. Betwixt that and 10 lost 2 oz. Eat to breakfast 1 lib. $5\frac{1}{4}$ oz. From 10 to a quarter before 1 lost 3 oz. Therm. 62, hydrom. 31. From the last weighing to 2 lost 2 oz. Eat to dinner 1 lib. 13 oz. I did not measure what I eat to supper, but it was a considerable quantity of salmon, sparrow-grass, cream and tart, and I drank a bottle of punch. Betwixt 12 at night and 9 next morning lost 17 oz. Was at that time a little sick. Betwixt half an hour after 10, and a quarter of 1 lost 5 oz. The sickness went off about 11, owing to this increase of perspiration, and a gentle looseness.

II. THESE experiments are sufficient to ascertain the quantity of perspiration in dry summer-weather, let us see how it goes in the moist summer-weather.

EXPERIMENT VII.

JULY 1st, At first, the air was very moist, for the hydrom. pointed at 46. The therm.

Sect. III. *and Experiments.* 245

therm. 60. barom. 29. Betwixt 11 at night and 9 next morning lost 1 lib.

THE day continuing moist, betwixt a quarter before 3 in the afternoon and 6, I lost, sitting all the time in my chamber, $3\frac{1}{2}$ oz. This is a less quantity than usual.

EXPERIMENT VIII.

JULY 2d, The hydrom. being at 48, which showed the air to be exceeding moist, notwithstanding the mercury in the barometer was at 29. Betwixt 11 at night and 7 this morning perspired but 2 oz. My head was very confused at this time, and my mouth dry. Pulse at 76 in a minute.

FROM 3 quarters of an hour after 9, to a quarter after 12, lost but $2\frac{1}{2}$ oz. Thus moisture stops perspiration in a great degree. Dr. Hales has observed, that mois-

R 3

ture

ture has the same effect on the perspiration of plants.

III. LET us see what effect frost has on perspiration.

EXPERIMENT IX.

JAN. 19, 1752, Being frost, betwixt 10 in the morning, and a quarter before 12, sitting all the time writing in my room, with a fire, I lost 8 oz.

EXPERIMENT X.

FEBRUARY 16th, Frosty weather, with a cold north wind. Betwixt 12 and half an hour after 2, playing all that time at golf, I lost, without ever sweating, 7 oz.

By these two experiments it appears, that the perspiration is greater in frost than in open weather.

IV. LET us now examine the effects of meat and drink, and fasting, on perspiration.

EXPERIMENT XI.

JUNE 3d, Having eat to supper a small portion of bread and milk, and drunk none, weighed myself at 11 and at a quarter before 9 next morning; during that time I lost 12 oz. I had sweated none.

EXPERIMENT XII.

JUNE 12th, I supped on a small portion of bread and milk, and drank afterwards more than an English pint of rum punch. I went to bed half an hour after 12. Betwixt that hour and 9 next morning, I had perspired but 8 oz. When I went to bed, hydr. at 39. therm. 63. When I rose hydrom. 43. therm. 61. When I wakened this morning, my mouth was dry, my tongue white, and my head a

R 4

little

little confused. These were all owing to my diminished perspiration.

EXPERIMENT XIII.

JUNE 5th, At night I supped plentifully on fish, duck, and asparagus, and drank the sixth share of a bottle of rum made into punch. I went to bed at half an hour past 12. Betwixt that time and half an hour past 8 next morning, I had lost 1 *lib.* 2 *oz.* The night seemed warm. Just after I rose, my pulse beat 88 times in a minute. Therm. at 60. hydrom. at 40.

EXPERIMENT XIV.

JUNE 11th, After eating plentifully of roast beef at dinner, sitting in my room betwixt the hours of 3 and 6, I lost but 2 *oz.* Hydrom. 34. therm. 61. The quantity of perspiration was, in this case, very small.

HAV-

HAVING drunk, at this time, 3 cups of coffee, from a quarter after 6 to half an hour after 9, I lost $4\frac{1}{2}$ oz. During that time I had walked slowly for an hour.

EXPERIMENT XV.

JUNE 12th. Yesternight I eat a moderate supper, which consisted of an egg and a piece of chicken. From half an hour past 11, to half an hour past 8 in the morning, I lost 15 oz.

EXPERIMENT XVI.

JUNE 14th, Last night I supped on milk and bread. Betwixt 11 and 9 this morning, lost $15\frac{1}{2}$ oz.

EXPERIMENT XVII.

JUNE 6th, Hydrom. 43. therm. 62. Having fatigued pretty much in the afternoon,
I went

I went to bed without supper, and was so hungry that I could not fall asleep for some time. Betwixt 11 at night and 7 next morning, I had gained 2 oz. Hydrom. and therm. the same as in the evening. Pulse beat 76 times in a minute. When I awaked, I felt a craving appetite. During that time I had separated from my vessels, though not evacuated, 6 oz. of urine. Dr. Keil relates, that a young man gained, after much fatigue, during the space of one night, in the month of December, 16 oz. Dr. Hales has observed, that plants often increased in weight after a moist night. Hence the danger of exposing one's self when the vessels are empty, to a morbid state of the air. Experience had already taught me, that the epidemic fever of 1748, which I have described, was generally caught in the morning, when the men were called out, and obliged to go several miles for their forage, without having got breakfast.

V. THE effects of rest and motion in perspiration.

EXPERIMENT XVIII.

JULY 6th, I sat in my room from half an hour after 9, *a. m.* to half an hour after 11 *a. m.* without motion. During that time I lost $2\frac{3}{4}$ oz. I had taken to breakfast a small piece of dry bread, with 2 large cups of tea. Therm. 61, hydr. 41.

EXPERIMENT XIX.

IMMEDIATELY after the last experiment, I walked about the streets of Edinburgh from 12 to 2; during that time I lost 4 oz.

By experiment N^o 3. it appears, that I lost 12 oz. in the same time, by walking in a hot sun-shine.

EXPE-

EXPERIMENT XX.

JULY 23d, 1752. Therm. 60. barom. 28 $\frac{5}{8}$. It rained all the forenoon, but the evening was clear. A fog still hung on the sea. At 6 p. m. I mounted on horse-back, and rode near four miles. I staid an hour, and returned to town at 9. I had not been out of the house the foregoing part of the day. During that time I lost 7 oz.

I AM very sensible how dangerous a thing it is to draw general conclusions from one, or a few particular experiments; especially where such a vast variety of circumstances ought to be regarded before we come to a determination. I am convinced that others, who have engaged in this subject, erred on this account, and attributed to one cause what belonged to another.

another. I think it, therefore, better to deliver the naked experiments, and leave every one to judge for himself.

S E C T. IV.

Of the measles as they appeared 1758 at Edinburgh, and of their inoculation.

THE measles appeared in Edinburgh about the beginning of December, and were very epidemic all the winter. In general they were of a mild sort; and not above the twelfth part died of those who were attacked. In general, the cough was very severe, even in the gentlest sort, from the first or second day of their being seized; continued, like a whooping-cough, to harass the patient till the turn of the measles, and then, in the favourable kind, abated very much, a looseness generally coming on about that time. I observed
that

that a moisture on the skin appearing along with the eruption, was always a favourable sign, the internal parts being freed by it. In the last epidemic measles of this place, in 1752, both the looseness and moisture were favourable signs. Where the disease was not so favourable, the cough and fever increased after the turn of the disease, and carried off the patient, or remained for some time. A stoppage of urine, from a fault of the kidneys, was not an uncommon symptom. It happened twice, where I was obliged to blister, on account of the breathing; so far from being afraid that the blister would augment this symptom, as it seemed to arise from an inflammatory state of the kidney, that I foretold an increase of urine from the application; and it happened accordingly in both.

In the month of May, when the weather began to turn very warm, the cough
was

was rather a little mitigated; but the peripneumoniac symptoms were much more common at the turn, and the fever continued for a long time afterwards. They were more favourable in the month of June, as the weather was then colder. They disappeared about the end of July.

It was not an uncommon thing for them to attack the same person twice; of which I had two cases: I was told that some had them thrice.

This disease was often of so malignant a nature, as to carry off the patient upon the arefcency of the measles. Many cases of this kind could be given. I shall relate but one.

Miss —, aged 28, was beginning to recover of a quotidian, which she had for two weeks, by the assistance of two bleedings, vomits, and the *infus. amar.*

APRIL

APRIL 28th, Her fever, as it was thought, became continual. For this she got a mixture of *sp. minder.* and *castor.* boluses at night. These kept her in a continual, but partial, sweat. May 1st, Leeches had been applied to her temples that morning for a pain of her head. She had a cough, and her breathing was a little affected. Her pulse was very weak, soft, and 120. That night I first saw her, and ordered a blister. May 2d, Measles appeared. Breathing more laborious. A partial, profuse, and continual sweating. Pulse 126, and rather more weak. Had been seized with a violent looseness last night. As no advantage was to be expected from these profuse sweats, ordered that she should be kept cooler; and that a very little claret should be mixed in her bread-berry. At night her eyes were much inflamed; her breathing quicker, and her looseness and partial sweating continued. Every circumstance now looked unfavourable. R *Syr. diacod.* ʒss *b. f.* 3d, Breathing worse. Sore throat.

throat. Cough not great. Tongue white. Drought considerable. Little sleep. Looseness still continues. Pulse soft, weak, and 144. Measles still out. *R Empl. episp. N. ij. tal. applicand.* *R Decoct. alb. pro pot. ordinari.* *R Emuls. campb. coch. i. 4ta. quaque hor.* The camphire was designed to divert the flow of humours from her guts, to remove the inflammatory state of her lungs, to rouse the pulse, and to give rest. I know no medicine that could answer these different intentions so well. 4th, Pulse weak, fluttering, and 160. Breathing very quick. Slight delirium. Died at 7 next morning.

I NEVER saw a more unlucky complication of symptoms in this disease: a laborious breathing, with a weak pulse; violent evacuations by sweating, and stool, with want of strength to support them. The previous ague had relaxed her fibres, and the constant sweating, during the eruptive fever, had carried off the thinner fluids,

S

which

which were to dilute the morbillous matter, and fill the measles, while the purging which came on afterwards, hindered any new accession of fluids to be made. Hence the morbillous spots never rose above the skin. Hence an inflammation of the throat, lungs, eyes, and brain. The inflammation of the lungs increased, even during the application of the blister, which made me despair of success.

THIS disease proved fatal to many, by bringing on a hectic disposition, or a pulmonary consumption, especially if they had a natural disposition to it. The following case was a most remarkable instance of this.

MISS —, aged eight years, of delicate lungs, and subject sometimes this winter to a cough, and therefore kept low in her diet, was seized, February 16th, with the symptoms of this disease. She was blooded to five ounces. Her cough and fever
was

was very gentle. On the 19th, the measles appeared; more came out on the 20th and 21st. This last day her pulse turned fuller and harder, and was about 150; and her breathing very quick and uneasy. Stoppage of urine. *R Venesect. ad 3v.* Blood always fizy. 22d, Pulse still hard, and breathing quick. *Repet. venes.* At night symptoms continue, but somewhat easier. Tongue dry. She had been taking all along the *linct. commun.* for the cough, and had got injections frequently. *Repet. venesect.* *R Empl. episp. terg.* 23d, Pulse softer, and 130. Breathing easier. Cough looser. Urine in greater quantity. 24th, Seized with gripes and purging, which gave her twenty stools. This was encouraged by injections, and manna. Her breathing quite easy. 25th, &c. Breathing pretty easy, but the fever, which is about 130 in the morning, rises to 150 in the evening, with a restlessness, hot skin, and dry cough. No appetite. Tongue moist, red, and a little sore. Considerable discharge

from the nose. She got a decoction of *sen.* and *tamar.* with which she passed some very hard fœces. March 2d, Got a vomit. Her stomach was full of slimy matter. The soreness of her tongue diminished after this vomit. 4th, Hot fits still continue. Frequent startings in her sleep, which is confused. Pulse firm. *Repet. venesf. ad 3vj.* This had no effect but to make the pulse softer. Got *crem. tart. & mann.* 6th, Pulse rather firm. *Repet. venesf. ad 3iv.* Blood still fizy. Breathing has been of late quick. 8th, She was blistered again, but it had no effect. Hot fits continue. 10th, She begins to take a decoction of the bark, which she continued for three days, but it dried the defluction, and gave her a stifling.

THE fever continuing much the same; her relations gave her James's powder; a third of a dose twice; the first raised a partial sweat on her, which soon went off; about three hours after, she got the second dose, which puked her once, and purged her
twelve

twelve times. That night she was more restless than usual ; her cough drier, her pulse weaker, and her throat was inflamed. The second day after, she got another dose which puked and purged her. These three nights she slept almost none. It was plain, from the hectic nature of this fever, that sweating could do her no service : it did her harm.

WHAT kept up this constant fever at 140 ? I could not think that it was an ulcer in the lungs, as the defluxion never had a purulent appearance, excepting for a few days, as she never had any pain there ; as the cough was much diminished ; as the fever, in the morning, was more considerable than the purulent fever is ; and as she never had a flushing in her cheek. It appeared rather to arise from a bad state of the fluids in general. She had very strong symptoms of worms, a greenish colour, itching of her nose, watering of her eyes, strong breath, frequent gripes,

swelling about her stomach, much slimy matter and stinking stools, her face and nose much swollen, constant startings in her sleep, and grating her teeth. It was therefore agreed to give her *Ethiop. miner.* & *pulv. stann. p. c.* and a glass of *aq. calc.* thrice a day. 19th, She passed what appeared to be a piece of a worm, or cluster of small worms. On the 20th, she passed a great quantity of the same worm-like substance. After this she slept better, and the startings left her by degrees. Her pulse was 128, but weak. Her appetite better, and a sediment appears in her urine in the forenoon. Takes the air in a coach, 28th, Both her eyes are very much inflamed. Pulse weak, and at 146, even in the morning. Blistered behind both ears, without much success. Sent to the country for air, exercise, and a milk-diet, An issue put in each arm.

APRIL 5th, The hot fits come on now very early in the afternoon. Frequent
loose-

looseness. The defluxion is now more gross, and yellow. Pulse weak, and 168. Appetite pretty good. The appearances of matter in the lungs were now very strong, and there certainly was a superficial suppuration at this time. 16th, Pulse 154. Eyes have been inflamed, and head blistered for it. Belly very regular. Almost no cough nor spitting. Drinks half of an English pint of asses milk in the morning. 22d, Cough and spitting gone. Her strength so great now that she can walk. Sleeps well, and spirits good.

MAY 1st, Pulse 135. Feverish fits shorter and weaker. More strength. 12th, Blistered again for the inflammation of her eyes, which brought on the quick breathing, and hot fits; but they are gone off again. *Repet. venesect. ad 3 viij.* Blood still fizy. 19th, Her eyes inflamed next day after bleeding. Much stronger and fatter. Pulse about 140. A seaton put in her neck. Went to the goat-whey. During the use of

this she gradually recovered. It was not, however, till the end of September, that her pulse returned to its natural state.

HERE was a hectic fever arising from the bad state of the fluids in general, and impressed by the morbillous matter. It was apparent from the beginning, that diet and exercise were alone to be depended on; and it turned out so; nothing was left for art, but to empty the vessels in general, when too full, by bleeding, and ease the local obstructions of the eyes by blisters and seatons.

MANY of the symptoms which increased the disease disappeared, upon passing what appeared to be dissolved worms.

IN an inflammatory state of the blood, whey never fails to do service, and is much preferable to milk: where the blood is watery and dissolved, it as certainly does harm.

I . AT-

I ATTENDED a boy, whose fever continued a long time after the measles. June 3d, When the measles were going off, he was seized with a quick breathing, and increase of his cough. Pulse 120. *Pbleb. ad 3iv.* & *Mixtur. ex sperm. cæt. solut. in mucilag. G. Arabic.* 4th, Pulse still strong, and breathing quick. & *Venesect.* 5th, Better. A great quantity of measles came out this night. 6th, Fever much the same. Breathing worse. & *Empl. episp. terg.* 7th, Breathing better. Measles still out. Looseness. 10th, Fever still same. Great cough and hoarseness. & *Syr. scillitic. cap. cochl. parv. 4ta. quaq. hor.* 15th, Fever same. Hoarseness gone. 17th, Breathing worse. & *Venesect.* The crassamentum was soft, and the serous part turbid, like mares urine. & *Syr. scillitic. ol. amygdal. dulc. p. e. M.* 27th, Fever the same. Sometimes very hoarse, and breathing quick. Ordered milk with *conserv. rosar.* twice a-day, and rhubarb at proper intervals. About the end of July the fever disappeared.

IN this case the milk agreed well with the child, as the blood was not inflammatory.

CONSIDERING how destructive this disease is, in some seasons; considering how many die, even in the mildest epidemical constitution; considering how it hurts the lungs and eyes; I thought I should do no small service to mankind, if I could render this disease more mild and safe, in the same way as the Turks have taught us to mitigate the small-pox. I suspected strongly, that the cough, often so harrassing, even in the mildest kind, was produced by receiving the infection mostly by the lungs; and I hoped that this symptom would abate considerably, if I could find a method of communicating the infection by the skin alone.

BUT there was no matter to be had from the measles. A woolen glove taken from
the

the arms of a measly patient would not answer my purpose, as part of the infection might be drawn in by the lungs. I could not find a sufficient quantity of scaly matter, after the measles were dried, to serve my purpose. I then applied directly to the magazine of all epidemic diseases, the blood.

As the measly matter behaved to be but a small proportion of the whole mass, I chused to make use of the blood, when it contained the morbid matter in the highest state of acrimony. In that situation the blood seemed to me to be, the next day after the turn of the measles, when their matter, by juxtaposition and stagnation becoming more acrid, as we know happens in all eruptive cases, was again absorbed into the mass of blood, and was the cause of the inflammations which happened then, and afterwards. I chused to take it from the most feverish patients.

I WAS

I WAS not contented with that alone, but thought that I should get the blood more fully saturated with what I wanted, if it was taken from the cutaneous veins amongst the measles, than if I took it from a large vein, where there was a much greater proportion of blood from the more internal parts, than from the skin. I therefore ordered a very superficial incision to be made amongst the thickest of the measles, and the blood which came slowly away was received upon some cotton.

WHAT I had most to fear, was a deficiency of morbillous matter; and therefore, it was plain, that the sooner it was applied, and the more close it was kept, the better chance it had to succeed. An incision in each arm, as is done in the small-pox, was giving it a greater opportunity to take place. I thought it a very material point to allow the wounds to bleed for a quarter of an hour before the cotton was put in, that the fresh blood might not
wash

wash off, or too much dilute the morbilious matter. I have always let it remain three days in the wound. I have kept exactly to all these circumstances, finding that the observance of them was attended with success.

UNDER an uncertainty, whether I was able to produce this disease, I made trial, and found it succeed. This success encouraged me to proceed towards completing the discovery. From the prejudices of mankind, I found it difficult to get the blood as I wanted it, and much more difficult to find subjects for inoculation. I shall circumstantially narrate the experiments which are already made, and which appear to me amongst the most material that ever were made for the good of mankind, in this part of the world; for the inoculation of the small-pox was already established in Turkey before it was brought here. Even there it was probably the effect of chance, and not the result of rea-

reason. This improvement in our art has been long wished for by many, but never yet, so far as I know, put in practice.

EXPERIMENT I.

MARCH 21st, A child of seven months old, with a scabby head, running behind the ears, and an eruption over its body for three months, but otherwise healthy, was inoculated by the blood taken from a measly child two days before. This was not the fittest subject that I would have chosen to begin with, but no other could be got. We had an opportunity of seeing the mildness of the disease, and of its effects on these eruptions.

27th, THE child was a little hot all last night, and had sneezed often this morning. The tongue was white, and eyes watery. The wound on the right arm was dried up, but that on the left was running plentifully. There was no inflammation on either.

28th, WAS hot and restless last night. Continued to sneeze, but no cough.

29th, OBSERVED three pustules on the face, and one on the back, of a very florid colour. Still sneezes. Coughed thrice this night. Hot and restless last night.

30th, ABOUT a dozen out, and of a very florid colour. Sneezing less. No sore eyes. Child very cheerful.

APRIL 1st, A few more measles are come out, and larger than the former, which were now beginning to dry. Sneezed a little, but no cough. A little restless during the night.

2d, STILL sneezing. Coughed three times. A little restless in the night, but quite cool all the day. A few more out in the face, the former gone.

3d, SPOTS still out. The scabs on the head,

head, and running behind the ears dried up. 4th, Measles going off.

THIS child has been free of all eruptions ever since.

EXPERIMENT II.

MARCH 27th, Inoculated a child of 8 years old, with the same blood, which had been kept ten days loosely in my pocket-book; I was afraid, when I used it, that it was too weak. The 6th day this child sneezed much, but never was hot or struck out. This child took the measles in the natural way, about two months afterwards; which inclines me to think that this failed, not from any particular disposition of the child, but from a deficiency of morbillous matter.

EXPE-

EXPERIMENT III.

THIS, and the following experiment, was made on two sisters, who had a cough all winter; but were otherwise florid and healthful. The blood was taken the day before, so that the cotton was yet moist. They were inoculated April 20th.

THE eldest, about six years, turned hot, thirsty, a little feverish, with a white tongue, and diminished appetite the next day after she was inoculated. I am apt to think that this was rather owing to fear from the incisions, or to cold, than to the nature of the disease, as I never have seen the matter affect others so soon.

27th, Hot and restless in the night. Sneezes. Has had a looseness last night. No appetite. Tongue white. Thirsty. Pain in the back part of her head.

T

28th,

28th, Much the same, but purging gone. A great quantity of water comes out of her eyes, so that she wets many cloths in the day. Her eyes cannot bear the smallest light, but not in the least inflamed.

30th, Has had the measles out since yesterday. Pulse quite calm. A great quantity still of sharp humour from her eyes. No appetite.

MAY 1st, Her eyes less weak, and the running diminished. Measles out.

2d, EYES well, and the measles gone.

EXPERIMENT IV.

THE youngest was three years old, and began April 27th, to be hot in the night, and to sneeze.

28th, STARTED sometimes last night. Cool and easy through the day. Tongue white.

29th,

29th, Not hot last night; but sneezes sometimes.

30th, SOME measles out. Not hot, and no cough. Tongue white.

MAY 1st, Not quite so easy as yesterday.

2d, MEASLES pretty large. More drought.

3d, THEY were still to be seen out, but disappeared next day.

EXPERIMENT V.

A SISTER of the two former, aged eight years, was inoculated May 3d, with the same blood, now 14 days old, but carefully kept in a glass. 10th, Somewhat uneasy to-day. 11th, Pain in her head. Pulse very little affected. Running at her eyes, but no inflammation. Loss of appetite, and drought. Sneezes much, and coughs a very little. 12th, Much the

same. Some spots have appeared. 13th, About two dozen out. Hot and sneezes. 15th, All the measles gone. This child was out all the day in the open air, till the day of eruption.

EXPERIMENT VI.

AT the same time, a child eight months old was inoculated with the same matter. On the 10th, the child began to be hot, to sneeze, to cough, to have a running from the eyes, and sometimes to vomit. The mother carried it about the country till the 13th, at which time about three dozen of measles appeared. 15th, Are yet to be seen, but beginning to disappear.

EXPERIMENT VII.

MAY 25th, A child eight years old inoculated with the same blood kept five weeks, but had no symptoms of the disease.

E X P E -

EXPERIMENT VIII.

JUNE 3d, A girl, thirteen years old, inoculated with blood, taken, May 27th, from a girl who had a great quantity, very considerable fever, and difficulty of breathing. 9th, Hot last night, sneezing, pain of her head and a little cough. 12th, Pain of her head and back, bleeding at the nose yesterday, and to day. Pulse 94, but no eruption. I was afterwards told that this girl had the measles two years ago, and that the mother had been led to this from the view of gain.

EXPERIMENT IX.

INOCULATED June 14th, a child five years old, with the same blood. 18th, Shivering at night, headach, and sneezing; hot in the night. 19th, Well all day, but the same complaints at night, with a gentle looseness. 20th, A little drought, and

whiteness of tongue. Sneezes, but no cough. Weak and watery eyes. Pain in her head. Pulse 120. 21st, Three coughs this morning. Pulse 110. No purging since last night. Sneezes often. Measles beginning to appear. 22d, Looseness; no cough. Turned hot, and vomited at bedtime; which was probably owing to her sitting at the door this night, which was cold: after this more measles came out. Moderate looseness. 23d, Measles still out. 24th, Almost all gone. Pulse at 83. Had gripes to-day, which ended in a looseness.

EXPERIMENT X.

JULY 6th, Inoculated a child eighteen months old, and of a very weakly constitution. Being afraid, that the blood taken May 27th, was now too old, and being uncertain whether some, taken June 27th, would answer, as the person from whom
it

it was taken was not feverish; I made use of them both mixed together. 9th, Feverish and drougthy. 10th and 11th, Better. 12th, Has coughed and sneezed some to-day. Puked a little. 13th, Coughed some in the night-time, and sneezed a little. Great drought; no appetite. 14th, Coughs pretty often; sneezes sometimes. Had many spots out this morning, but almost all gone in again. 15th, a great many measly spots out, but especially on the sides and thighs, where they almost touch one another: they are much more distinct than they have been this winter in the natural way. Eyes have scarcely yet watered; thirsty; sneezes a little; coughs more. 16th, Loose belly. 17th, Looseness gone; spots disappearing; no cough or sneezing.

THIS patient had more of the cough, and less of the sneezing and watering of the eyes, than any of the rest. It would seem, that the latter secretions being dimi-

nished, more of the saline matter was separated by the *trachea* and lungs.

THIS child took the measles again, August 20th. The spots were more numerous, and run more together; and the disease was attended with a severer cough, and a little difficulty of breathing. A natural looseness carried off these symptoms.

WAS this disease owing to a new infection, or was it the effect of the inoculation? I am of the latter opinion; because, immediately after the first measles, it was seized with a swelling of the parotid gland, a proof that all the matter was not carried off by the eruption: this continued during the interval, with a constant cough and sneezing: besides, there was not another natural measles in the town or country, so far as I could hear. I have seen several cases in the natural way, where one infection produced two eruptions. Why may it not likewise in the inoculated?

E X P E -

EXPERIMENT XI.

AUGUST 29th, With blood taken two days ago from the former patient I inoculated a child eight months old. This child was getting teeth, and had been troubled with a cough and looseness for eight days. September 7th, Had been hot, restless, drougthy, and had sneezed for some nights. Some spots seen yesterday. 8th, tongue white. Coughed and sneezed some. About a dozen and an half of spots. 9th, spots almost gone.

EXPERIMENT XII.

AUGUST 30th, With the same blood a very healthful child, aged 18 months, was inoculated. September 7th, Has cried all night, and has been hot and thirsty. Looseness. Coughed and sneezed. 8th, About three dozen of spots to be seen. Vomited
all

all her drink this morning. Tongue very white. Very fretful. Rubs her eyes frequently. Pulse 132.

THESE two last experiments were tried, at a time when there were no natural measles; and consequently in a time of year very opposite to the disease.

EXPERIMENT XIII.

THAT I might see the difference of the disease, when it is communicated by the lungs alone, and when by the skin alone,

MAY 25th, I put into the nose of a child, for an hour, some cotton, which had been for some time in the nose of a measly patient, the fourth day of the eruption; but no disease followed.

JUNE 11th, Put some cotton into the nose of a child two years old, which had been

been for an hour, in the nose of a measly child, the day before. But no disease.

JUNE 13th, Put some cotton, dipt in measly blood, May 20th, into the nose of a child. But no disease.

I CANNOT, from these three experiments, say, that the disease may not be inoculated this way; for the children let the cotton remain too short time in their noses.

I HAVE hitherto narrated the naked facts, as they presented themselves to me, that every person may have an opportunity of judging for himself. Let us now draw some corollaries from the foregoing experiments.

Corol. 1. THE blood of a measly patient taken in the manner before described, contains a sufficient quantity of the morbid matter, to produce, by some fermentative power

power natural to it, the measles. It would appear, that these morbillous effluvia are capable of going off, if the blood has free communication with the external air, or is kept five weeks, even in a well corked vial.

Cor. 2. IN the inoculated measles the patient generally sickens about the 6th day. Here the disease comes on sooner, and seems to be more fixed in the time than in the inoculated small-pox, which varies from the 7th to the 11th. Its first approaches are generally felt only in the night-time, the children being well all the day.

Cor. 3. It appears that the inoculated measles are a much milder disease than the natural, as the former are not attended with that degree of fever which precedes the latter; nor with the cough, want of rest, and other inflammatory complaints which attend it; nor with the sore eyes, cough

cough, hectic fever, or ulcerated lungs, which so often follow it. Inoculation appears to weaken the force of all diseases. Whence does this arise? Is it because the effluvia of natural diseases enter the vessels unmixed and undiluted; and therefore operate with more violence on the fluids? Is it because they are taken in at the head, lungs, and stomach, parts remarkable for their nervous sympathy with the rest of the body? Or, must the blood be in somewhat of an inflammatory state before so small a quantity, as is received in the natural measles, can raise the disease? All these causes, I believe, contribute.

Cor. 4. THE pathognomonic symptoms of this disease, viz. running of the eyes, and sneezing, are as strong in the inoculated, as in the natural measles: I never saw so great a running from the eyes, in this disease, as happened in one of these experiments. The principal action of the morbil-

lous matter appears to be on this saline humour, secreted from the *glandula lachrymalis*; for the sneezing is probably owing to the irritation of the same matter, when it arrives in the nose, upon Sneider's membrane. This inclines me to think, that the morbillous matter is itself of a saline acrid nature; and therefore associates more readily with these humours in the body, than with any other.

Cor. 5. BUT what is most surprising is, that the cough, so constant an attendant on the natural measles, almost totally disappears in the artificial kind. Some of my inoculated patients had the cough all winter, others were carried about till the eruption, yet this symptom still continued mild. This symptom is probably owing to some measles, or inflammatory spots coming out on the surface of the lungs; for these are always found on opening the body, and in the more kindly sort the cough disappears on the turn of the disease. It appeared

peared highly probable before inoculation; it appears pretty certain now, that this symptom arises almost wholly from the infection being received by inspiration, and fixing on the lungs. I endeavoured to bring it to the test of experiment, as that alone is to be trusted; but, as yet, I have failed in inoculating this disease by the nose.

Cor. 6. THE inoculated measles have their crisis commonly by purging, as the natural sort. It is probably owing to some of the saline humours going off at the guts: it sometimes raises violent gripes in its passage.

Cor. 7. THIS artificial disease appears to have cured a child of cutaneous eruptions, with which it was troubled for three months before. By combining with these it had exhausted them all at once.

Cor. 8. THE incisions by which the measles are communicated do not, when
the

the eruptive fever comes on, inflame again and suppurate, as they do in the inoculated small-pox. Is this owing to the greater quantity of variolous matter, or to its greater acrimony? Both these causes, I believe, concur:



F I N I S.